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Smoke Signals:
Patterns of agency assignment in smoking initiation and cessation narratives

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Smoke Signals: Patterns of agency assignment in smoking initiation and cessation narratives

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This research sought to describe and understand patterns of linguistic agency assignment in smoking cessation narratives. To this end, a corpus of these narratives gathered from an online twelve step cessation program, Voices of Nicotine Recovery (VONR), was constructed and an objective scheme for coding linguistic agency assignment in ex-smokers' cessation narratives was developed. When discussing smoking and addiction, speakers have the option of linguistically assigning agency (i.e., the capacity for action) to themselves, others, inanimate objects, or to abstract concepts like addiction. Patterns of agency assignment may provide insight into conceptions of efficacy and responsibility for addictive behaviors. The author predicted patterns of linguistic agency based on the dominant disease model of addiction, cessation programs based in this model, and extant findings concerning self-efficacy and nicotine addiction. The author hypothesized that ascription of agency would vary during the stages of addiction such that personal agency would decline and non-personal and non-human agency would increase following addiction. Findings were consistent with predictions concerning increases in non-human agency following nicotine addiction relative to pre-initiation

levels. However, observed patterns of agency assignment were not consistent with other predictions based in the disease model. It was also hypothesized that following the expected decrease in personal agency ascription after smoking initiation, personal agency assignment would then increase leading to cessation attempts. During quit attempts, personal agency assignment was expected to decrease before rising following successful cessation to its highest post-initiation levels. As predicted, the highest post-initiation levels of personal agency assignment were observed following cessation. However, the data were inconsistent with expected patterns of linguistic agency for other stages. These findings suggest that the study of linguistic agency in addiction narratives may contribute to an improved understanding of how addiction operates and the extent to which the disease model is predictive of the way in which recovering nicotine addicts view their addiction and cessation. Findings, implications, and additional areas of research are discussed.

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Chapter 1: Introduction

According to the CDC, 16.8%, or about one out of every six U.S. adults, are considered current cigarette smokers (2015). As defined by the CDC, current smokers are those "persons who reported smoking at least 100 cigarettes during their lifetime and who, at the time they participated in a survey about this topic, reported smoking every day or some days". It is estimated that on any given day more than 3,000 young people will have their first cigarette and over 2,000 people will become daily smokers. While the percentage of the population that are current smokers has been falling steadily in recent years, smoking is still the single leading cause of preventable deaths in the U.S. and across the world (Centers for Disease Control, 2015). Tobacco use including cigarette smoking causes nearly six million deaths per year worldwide. This number is expected to rise to eight million per year by 2030. Just in the United States, 480,000 deaths a year are linked to tobacco related illnesses and more than 16 million Americans are currently living with a disease attributable to smoking. Smokers have a life expectancy on average ten years shorter than non-smokers (Danaei et al., 2009). This is not without a financial effect. In the U.S. alone, the economic cost of smoking totals more than $300 billion annually composed of $170 billion in medical care and over $150 billion in lost productivity due to secondhand smoke exposure and premature mortality. Given the enormous human and financial costs of nicotine addiction, the need for effective treatment, cessation support, and effective public health messaging is clear.

Smoking has several characteristics that make it quantitatively and qualitatively different from other common health threats. These include the voluntary nature of the smoking, the extent to which cigarettes are addictive, the likelihood of relapse, the immediacy of short term positive effects, the delayed appearance of detriments to health and other negative effects of smoking, and the delayed positive effects of smoking cessation. In terms of treatment and public health campaigns, smoking is often treated like alcohol or illicit drugs using twelve-step programs (McCullough & Anderson, 2012). However, cigarettes are not illegal and unlike alcohol, do not lead to immediate negative health effects or behavior. Consequently, smoking cessation programs face unique challenges in terms of affecting behavior change.

In a recent study of a large sample of current smokers (CDC, 2011), 69% reported a desire to stop smoking and 52% reported making a quit attempt in the previous year; however, only 6% reported successful cessation (CDC, 2011). Even among those who have initial success, many quit attempts do not succeed, with only 12% of smokers who quit smoking for one month identifying as tobacco-free after two years (Raherison et al., 2005). Research has found that significant predictors of successful smoking cessation include demographic variables such as gender, income, age when smoking began, and age during quit attempt (Hymowitz, et al., 1997). Socioeconomic status in particular has consistently been identified as a predictor of successful cessation (Hiscock, Judge, & Bauld, 2010). These findings might allow targeting of messages to particular at risk groups, however, demographic factors are largely not actionable in terms of treatment or the design of public health messages. Researchers have also identified variables related to

addiction behaviors such as alcohol intake, daily cigarette consumption, time until first cigarette in the morning, and number of past quit attempts. A number of studies have identified these and other dependence-related factors as the primary predictors of the success of cessation attempts once initiated (Hymowitz et al., 1997; Vangeli, Stapleton, Smit, Borland, & West, 2011). The best predictors of successful cessation are those related to the habit including consumption and number of past attempts (Hymowitz et al., 1997; Vangeli et al., 2011). These predictors are helpful in terms of understanding cigarette addiction, but aside from demonstrating that multiple quit attempts will increase chances of success, these findings merely show that those with greater levels of use will have a more difficult time quitting. The low rate of long term success, as well as other aspects of smoking similar to long term health behaviors like drug use, present challenges in terms of study design as investigation generally requires longitudinal or retrospective approaches.

Health effects due to smoking are not immediately apparent; instead, they are often delayed by many years. From a treatment standpoint, smoking cessation covers a very long period of time. In fact, because of the likelihood of relapse, some studies have operationalized smoking cessation as having occurred only after two full years of abstinence (Vangeli et al., 2011). Unlike treatments such as vaccinations which nearly instantly convey an increased resistance to a health threat, or medication such as antibiotics which lead to recovery in short order, treatment for smoking constitutes a continuous lifestyle change and is only effective if it is maintained. The monetary and psychological cost of many medical interventions, such as a flu or HPV vaccine, is

relatively low and can be accomplished in a matter of hours, however, the psychological cost of smoking cessation is more extreme, is ongoing, and is often cyclical in nature.

As noted by McCullough and Anderson (2012), coding agency in smokers' narrative accounts of their addiction has the potential to inform treatment approaches and public policy. However, previous research into smokers' agency assignment has used a qualitative approach that is not suited for replication or application to large data sets (McCullough & Anderson, 2012). A growing body of quantitative research has investigated linguistic agency both as a manipulated variable in constructed materials and as variable measured in spontaneously produced language (McGlone & Pfeister, 2009; McGlone, Bell, Zaitchik, McGlynn, 2012; Bell, McGlone, & Dragojevic, 2013a; Bell, McGlone, & Dragojevic, 2013b; Dragojevic, Bell, & McGlone, 2013). While this body of research has resulted in quantitative operationalizations of linguistic agency concepts, these operationalizations have not been integrated into a coherent coding scheme. A reproducible quantitative coding scheme has the potential to further these aims and facilitate analysis of larger corpora. The following study sought to apply a linguistic approach to coding agency assignment in order to better understand and describe patterns of agency assignment language in retrospective smoking initiation and cessation narratives.

Chapter 2: Smoking and Linguistic Agency

Stages of Smoking Initiation and Cessation

The primary way of conceptualizing the cycle of cessation attempts and relapse common in attempts to quit smoking has been the transtheoretical model (Prochaska & DiClemente, 1986). The transtheoretical model was originally proposed by Prochaska and DiClemente (1986) and has subsequently gone through multiple revisions (Prochaska & Velicier, 1997; Sutton, 2001; West, 2005). Also known as the "stages of change" model, it identifies the stages of cessation behavior change as pre-contemplation, contemplation, preparation, action, and maintenance (Ockene et al., 2000; Prochaska & DiClemente, 1986). A given person may go through some or all of the stages in the process of behavior change. The divisions between these stages are defined in different ways for different types of behavior change. This model has been most commonly used with smoking and the definitions of each of the stages when applied to smoking cessation are particularly developed and specific (West, 2005). The transtheoretical model is generally applied to current smokers and those who have terminated their smoking behavior (Prochaska & DiClemente, 1986).

Pre-contemplation is characterized by no intention to change the current status quo (smoking). The next stage, contemplation, is marked by an awareness of the negatives associated with smoking and cigarette addiction. People in this stage may still be unsure of whether they will quit smoking and have not necessarily yet made a commitment to cessation. The preparation stage occurs prior to the onset of behavior change and is characterized by a commitment to quitting smoking. Individuals often seek

assistance during this stage. At the outset of the pre-contemplation stage, reported self-efficacy is generally low. Reported self-efficacy then tends to rise during each of the following two stages (contemplation and preparation) leading to active attempts to quit (DiClemente et al., 1991). The action stage is defined by the subject making steps towards smoking cessation without complete termination of smoking behavior. This stage is often very brief as many move quickly to maintenance or relapse to previous stages of pre-contemplation or contemplation. Once cessation has occurred, the individual enters the maintenance stage. This stage is defined by successful termination lasting at least six months without interruption by relapse. Research has found that this stage is associated with high levels of reported self-efficacy (Prochaska & Velicier, 1997). This is not necessarily the final quit attempt as it is still possible for relapse to occur. Relapse is not a stage in itself, but instead is a return to an earlier stage from the action or maintenance stages (Prochaska & DiClemente, 1986). Some versions of the model also include a final stage of termination following the maintenance stage in which the behavior change is permanent (West, 2005). This stage can also be collapsed into the maintenance stage and is similarly associated with high levels of self-efficacy (Prochaska & Velicier, 1997). Findings concerning self-efficacy are perhaps especially notable for the purpose of this study since both self-efficacy and linguistic agency are associated with power and responsibility in affecting change. Given this conceptual relationship it would be expected that perceptions of self-efficacy may impact patterns of linguistic agency ascription. More recent revisions of the transtheoretical model have further defined stages based on time since last quit attempt and time until the next quit attempt. As an example,

'contemplation' involves an individual planning to stop smoking between 31 days and 6 months in the future, or in less than 31 days if they have not tried to quit for 24 hours in the past year (West, 2005). Various versions of the model as it has evolved since its original conception are still in use, some of which make use of the time-bound definitions of the stages and other which are based primarily on the conceptual definitions defined in earlier versions of the model (West, 2005; Sutton, 2001).

The transtheoretical model is not just a way of conceptualizing smoking cessation behavior change, but has also been applied to a variety of other health behaviors especially those involving addiction such as alcoholism (West, 2005; Sutton, 2001). In fact, the model has broad application to describing behavior change in general including behavior change that might be characterized as negative, such as the initiation of smoking behavior. While perhaps the most prevalent way of conceptualizing cessation, the transtheoretical model is not without criticisms. Application of the stages of change model to smoking cessation has been greatly refined since inception, however, the stages have been criticized as being undefined and lacking true exclusivity when applied to some types of behavior change, while the opposite criticism has been leveled in reference to applications in the realm of tobacco cessation, with some considering the divisions between stages to be arbitrary in nature (Herzog, Abrams, Emmons, Linnan & Shadel, 1999; Sutton, 2001; West, 2005). In other words, in some cases the stages are not mutually exclusive or easily delineated, while in others, the distinctions between stages while clearly defined may be entirely arbitrary. The result is that individuals may meet the criteria of multiple stages, or in other cases, people who are in very different points in

the process of cessation may be described as being in the same stage of behavior change. Despite this criticism, the transtheoretical model remains the primary model of addiction and cessation (Sutton, 2005).

Given that the transtheoretical model can be applied to a variety of behavior changes, it is possible to apply the model not only to cessation, but also to initiation of smoking behavior. Due to the structure of the model, this results in overlap between the latter stages of initiation and the early stages of smoking addiction and cessation. As applied to smoking behavior starting before use and continuing through cessation, the transtheoretical model can be thought of as having eleven distinct stages. Smoking initiation is composed of the first four stages of initiation pre-contemplation, initiation contemplation, initiation preparation and initiation action. While it is possible to continue describe the stages of behavior in terms of initiation, initiation action marks the beginning of the smoking behavior and the point at which the stages can be begin to be described in terms of stages of cessation behavior. Cessation is composed of six stages including cessation pre-contemplation, cessation contemplation, cessation preparation, cessation action, cessation maintenance, cessation termination, and, while not a stage in and of itself, potentially cessation relapse.

NARRATIVES AND MODELS OF ADDICTION

Evaluations of smoker's cessation narratives have been a valuable tool for addiction researchers (Stephenson, Laszlo, Ehmann, Lefever, & Lefever, 1997; Stephenson & Zygouris, 2007). Researchers have suggested that people organize their lives into narratives and that these narrative accounts provide insight into people's

subjective perceptions (Baumeister, Stillwell, & Wotman, 1990; Gergen, 1998). Research on addiction has investigated various linguistic phenomena in treatment diaries written by participants in recovery programs for various substances (Stephenson et al., 1997; Stephenson & Zygouris, 2007). This research has indicated a link between outcome variables, treatment success and linguistic variables found in addiction narratives. Narratives in these studies were collected throughout treatment and were assessed based on linguistic change over time. These studies indicated that changes in language over time and overall patterns in language collected over the entire course of treatment were correlated with treatment outcome variables (Stephenson et al., 1997; Stephenson & Zygouris, 2007). Successful cessation has been associated with narratives that focus on personal progress, express positivity about the program and negativity about the self, demonstrate decreasing levels of self-criticism over the course of treatment, and include words indicative of negativity and insight (Stephenson & Zygouris, 2007). The authors frame these language features as both predictive of future success and indicative of current successful cessation.

Research has also been conducted directly on smokers' quit narratives collected retroactively, largely with a focus on providing prescriptive findings for informing treatment efforts (Bottorff, Radsma, Kelly, & Oliffe, 2009; Helvig, Sobell, Sobell, & Simco, 2006; McCullough & Anderson, 2012). As researchers continue to seek insight into the most effective ways to approach smoking cessation treatments, narrative research has provided insight into connections between language use and treatment outcomes. The design of treatment approaches invariably stems from underlying models of addiction.

Each model of addiction either explicitly or implicitly suggests a treatment approach (McCullough & Anderson, 2012). There are a number of different conceptions of addiction that have been used in this fashion. These include the neurobiological disease model, referred to as the "disease model" here forward, which argues that drug-use and other addictive behaviors alter the reward system in the brain, which in turn leads to a loss of individual control (Koob & LeMoal, 2008). The disease model suggests that treatment should be targeted at restoring the reward system in order to reduce or eliminate the reinforcement provided by ingestion of nicotine. This treatment is often manifested in the form of twelve-step programs and nicotine replacement therapies, which aim to reduce physical dependence. The disease model of addiction sees use as being biologically driven and attributes little if any agency (that is, responsibility for addiction-oriented action) to individuals while they are addicted. Instead, agency is conceived of as being "co-opted by the addiction illness" (McCullough & Anderson, 2012). Many types of addiction treatment, including twelve-step programs, are an outgrowth of this addiction model. These programs emphasize a loss of volition during addiction, admitting powerlessness, submitting to outside forces, and eventual reclamation of responsibility for one's actions (Alcoholics Anonymous World Services, 1981; McCullough & Anderson, 2012;).

Alternatively, psychosocial models argue that addiction is adaptive and acts as an escape from the world (Alexander, 2008). This model attributes addiction to insufficient emotional or social support and other societal pressures. Psychosocial models tend to frame addiction as an adaptive behavior despite its often destructive nature. In this

understanding, addiction is seen as socially determined. Very little agency is ascribed to the user during the onset and continuation of addictive behaviors. Treatment approaches informed by psychosocial models tend to focus on destigmatization and harm reduction (McCullough & Anderson, 2012). Disease and psychosocial models have largely replaced previous conceptions of addiction as a moral failing (Peele, 1988). Unlike the models described above, moral models of addiction ascribe agency almost entirely to the addict. Moral models tend to encourage social stigmatization and public policies to combat addiction.

In contrast to the moral model, which places agency solely on the shoulders of the addicted individual, or disease and psychosocial models which see addiction as stripping away most if not all agency from the addicted individual, the social constructionist model portrays addiction as an individualized response to socio-economic and cultural factors including race, gender, and a number of other factors (Burr, 2003). In this view, the currently dominant disease model of addiction may actually be exacerbating the problem. McCullough and Anderson (2012) argue that the model may reduce people's sense of self-efficacy or agency for their choices. In contrast, agency is much more complex in the social constructionist view of addiction. According to McCullough and Anderson (2012), "the postmodernist concept of self and other, including development and human agency, are viewed as interdependent, communal, and dialogic entities and processes rather than as isolated autonomous interior ones (p. 249)." In this view, agency is neither entirely that of the addicted individual, nor is it entirely

removed from that individual, instead it is an interaction between societal forces and individual characteristics.

Recent work investigating the concepts of agency and responsibility as enacted in language usage in narratives has been informed by this social constructionist model (SC model) (O'Conner, 2000). This approach is a product of the humanist paradigm and the postmodern view of constructivism (McCullough & Anderson, 2012; Burr, 1995; Rudes & Guterman, 2007). In this view, addiction is constructed by social, historical, and cultural factors which limit possible actions and contribute to personal circumstances (Cosgrave, 2010; Gergen, 2001; McCullough & Anderson, 2012). The social constructionist understanding of addiction has led to the investigation of expressions of responsibility and agency in narratives and interviews with a focus on therapeutic applications (Gergen, 2001). This model of analyzing agency language in narratives and interviews conceptualizes statements as falling along a continuum from most responsibility (claiming personal agency) to moderate responsibility (problematizing agency) to least responsibility (deflecting agency). The SC method of interpreting agency language has been used in a variety of contexts, perhaps most notably in analyzing prisoner's narratives about their lives (O'Conner, 2000). More recently this approach has been applied to smokers' narratives with an emphasis on guiding treatment efforts (McCullough & Anderson, 2012). Disease models and treatment efforts such as twelve-step programs emphasize a loss of agency and responsibility and may deemphasize the role played by society or the addicted person (McCullough & Anderson, 2012). McCullough and Anderson argued that disease models of addiction may be negatively

impacting smoking cessation efforts and sought to examine smokers' language for evidence of the disease model's expected impact on smokers' understandings of their addictions.

As discussed above, the social constructionist coding of agency places responsibility on a continuum from claiming (most agency), to problematizing (moderate agency) to deflecting (least agency) agency (McCullough & Anderson, 2012; O'Conner, 2000; Zildjaly, 2009; Turkel, 2003). The expression of this agency is characterized by certain patterns of linguistic construction, such as "action-oriented verbs in active voice combined with a personal pronoun subject 'I'" (O'Conner, 2000, p. 39), which are associated with claiming agency. Deflection of agency tends to be associated with constructions in which the verb has "something happening to the subject rather than by the subject" and in cases where the verb refers to a static state (McCullough & Anderson, 2012; O'Conner, 2000; Zildjaly, 2009). Grammatically, the former example of deflection would be expected to occur when a sentence is phrased in the passive voice or has a non-personal pronoun or classifier in the role of what McCullough and Anderson refer to as the "subject". In their sense of the term, subject refers to the speaker and not the grammatical subject of the sentence. In the case of the latter, a speaker can deflect agency in the act of smoking by using phrases such as 'I'm addicted'. 'Addicted' is a static state and something that is happening to the subject and is therefore considered a deflection of agency (McCullough & Anderson, 2012).

Plural personal pronouns such as 'we' and the generalizing 'you', identified by O'Conner in interviews with prisoners, are also seen as indicative of deflection

(McCullough & Anderson, 2012; O'Conner, 2000). The generalizing form of the word 'you' is characterized by statements in which 'you' references not an individual person, but a broader audience as in the example of *If you smoke, you become addicted.* Use of plural pronouns shares agency, but does not deflect it completely (O'Conner, 2000). The generalizing *you* stands in for the pronoun *one* and acts as a hypothetical every person. In statements such as *you become addicted,* this serves to frame the statements as inevitabilities of the human condition (O'Conner, 2000). While context is important, deflection through use of verbs that act on the subject is generally seen as indicating comparatively lower levels of agency. Regardless, these guidelines are not seen as absolutes (McCullough & Anderson, 2012). While grammatical features are identified in each example of the SC coding scheme, sentence structure alone is seen as inadequate for determining agency and responsibility (McCullough & Anderson, 2012; O'Conner, 2000; Zildjaly, 2009). This ambiguity has the potential to result in disparate interpretations of similar utterances depending on contextual information and may also lead to limitations in terms of producing reliable measurements. However, McCullough and Anderson (2012) argue distinctions such as those between problematizing agency and deflecting agency may not be captured by grammatical construction alone.

LINGUISTIC AGENCY

McCullough and Anderson (2012) highlight the importance of understanding the role various models of addiction may have in shaping patients' understanding of their actions and determining how this may impact potential outcomes. However, the subjective and variable nature of the described social constructionist coding scheme,

while useful in therapeutic settings, makes large scale comparisons or investigations of patterns across subjects difficult. An alternative understanding of agency, from the viewpoint of linguistics, however, is defined largely along grammatical lines (Kroeger, 2005; Chomsky, 1965; Dowty, 1991). A coding scheme guided by these studies and related research has the potential to generate replicable findings across coders while capturing similar dimensions to the SC coding scheme.

Languages allow speakers a number of options when constructing messages. Many of these choices are subtle and do not appreciably affect the content of the message, but instead are, for the most part, functionally equivalent in terms of content. These choices can be lexical or grammatical and may convey the speaker's beliefs or attitudes (McGlone et al., 2012). Linguistic agency (sometimes referred to as grammatical agency) is one such language choice that has been subject to an increasing amount of research interest. The *agent* can be understood as an event-related entity affecting action or change in a sentence (Chomsky, 1965; Dowty, 1991; Kroeger, 2005; McGlone et al., 2012). The *patient*, an entity acted upon or changed by the agent, is the grammatical counterpart to the linguistic agent. Agency ascription can be conveyed through a variety of verb and noun types beyond just those that convey concrete action conducted by an animate entity. Many types of verbs can be thought of as denoting action in this sense. Action may be something such as *running*, *smoking*, or *quitting*, but may also be something more cognitive such as *wanting*, *trying*, or *thinking*. While agency is often assigned to animate living entities (e.g. *the man smoked)* that can literally be said to have taken action or affected change, agency can also be assigned to inanimate objects

(e.g. *the cigarette burned*) and abstract concepts (e.g. *addiction took hold of me*) (Dowty, 1991; McGlone et al., 2012). Agency can be assigned to one or more elements in a sentence concurrently (Dowty, 1991). Semantically, agents tend to have one or more of the properties below and are defined by possessing a greater number of these properties than the associated patient (Dowty, 1991). Dowty considered the last property (e) to be less important and less universal (indicated by use of parentheticals).

a. volitional involvement in the event or state
b. sent(i)ence (and or perception) (sic.)
c. causing an event or state of change in another participant
d. movement (relative to the position of another participant)
e. (exists independently of the event described by the verb)

While this definition of agency requires understanding of semantic meaning, as conceded by Dowty when it was proposed, agency assignment tends to follow grammatical patterns which can be used to consistently discern linguistic agency in a reproducible fashion (Dowty, 1991).

The subject of a sentence is often also the grammatical agent, but in some cases, such as sentences constructed in the passive voice, the subject and linguistic agent are distinct. In the example below, the bold words are the subjects of the sentence and the underlined words are the agents. The first example is phrased in the active voice and the second in the passive voice.

1. *The **woman** smoked the cigarette.*

2. *The **cigarette** was smoked by the woman.*

In both cases the woman is the agent of the sentences, but choices in sentence construction assign the role of grammatical subject to different elements. Given the

consistent nature of this pattern in relation to active and passive voice, semantic entailments are not necessary to make this determination. This makes grammatical coding of agency ascription a practical endeavor.

Linguistic agency can be assigned to living beings, groups, inanimate objects, events, natural and artificial forces, and concrete and abstract concepts (Bell et al., 2013a). In most cases, a given sentence can be constructed to assign agency to multiple entities while still adhering to rules of grammar and usage. Despite the variety of ways that agency can be assigned, there are consistent grammatical patterns that allow one to determine the agent of a given sentence or phrase (Dowty, 1991). Research has shown that differences in agency ascription may have an impact on how messages are evaluated and received (Bell et al., 2013a; Bell et al., 2013b; Dragojevic et al., 2013; Fausey & Boroditsky, 2010; McGlone et al., 2012), may provide insight into the affect of a speaker (McGlone & Pfeister, 2009,) and the way in which that speaker ascribes responsibility for a given event (Fausey & Boroditsky, 2010; Fausey, Long, Inamori, & Boroditsky, 2010). The potential within health contexts, notably addiction research, for generating useful findings based on objective quantifiable coding of agency ascription is clear. A structure for classifying potential linguistic agents is detailed below.

Human agency

Perhaps the most intuitive form of linguistic agency assignment is to humans. The capacity for action (intentional or not) is assumed for living and sentient people, so we commonly assign agency to them:

3. *I smoked a cigarette.*

4. *John smoked a cigarette.*

5. *We smoked cigarettes.*

6. *My parents smoked cigarettes.*

In these examples, human agency is characterized by human nominal pronouns (e.g. *he, she, I, we,* etc.) and human classifier agents (e.g. parents, John, etc.). Though the agent is usually the subject of the sentence, in passive voice constructions, the agent is generally the object of the preposition *by*. Each of the examples above represent a distinct subtype of human agency described below.

Personal agency

Human agency assignment can be further divided based on relation to the message producer. This division of agency results in the dichotomy of personal and non-personal human agency. Personal linguistic agency can be understood as ascription of action to the message producer (Kroeger, 2005). Personal agency is characterized by use of the first person human nominal pronouns I and me (and more rarely use of a third person classifier), as in:

7. *I built that house.*

8. *That house was built by me.*

Shared agency

Personal agency need not necessarily be individual agency, but can also be ascribed to groups of which the speaker is a part in certain instances. This will be referred to as shared personal agency. The pronoun *we* is one such example as are instances of first person pronouns paired with a second agent through use of words such as *and*.

9. *We smoked cigarettes.*

10. My friends and I smoked cigarettes.

In example 9, *we* includes the speaker as well as other undefined entities. Example 10 shows how other constructions using personal pronouns can similarly express shared agency. These are examples of personal agency that extend beyond the speaker to the others, but can still be understood as falling on the personal agency side of the described dichotomy.

Non-personal/other agency

Ascription of agency to human agents and groups of human agents other than the message producer is defined as non-personal or other agency (Kroeger, 2005). Non-personal agents include second and third person pronouns and human classifier agents.

11. John smoked a cigarette.

12. They smoked a cigarette.

13. She smoked a cigarette.

Notably, pronouns such as *they* may function as either a human or non-human agent depending on the referent.

Groups that can be understood as being composed of human actors are treated grammatically in much the same way as individual human actors. In the example below, the 'team' is filling the role of a human agent in a linguistic sense.

14. The team went to buy cigarettes.

More complex sentences can offer additional options in terms of agency assignment. Other-person agency is characterized by human pronouns (e.g. *he, she, them,* etc.), or

human classifier agents (e.g. *Steve, people, team,* etc.) that do not refer to the message producer.

Non-human agency

Linguistic agency can also be assigned to non-human entities which may or may not have the literal capacity to act (Kroeger, 2005). Agency can be ascribed to animals, events, objects, and a variety of other non-human actors. In these cases, the sentence can be said to have a non-human agent. Examples of non-human agents are below. In each case, the agent of the sentence is underlined.

15. The dog ate my sandwich.

16. Tobacco is harming my health.

17. The summer is approaching.

18. Smoking causes cancer.

19. Addiction controls you.

Non-human agency can be divided into two subtypes, concrete and abstract agency, each of which can be further divided into component subtypes. Each of the examples above represent a distinct subtype of non-human agency. This structure is further described in the section below.

Concrete non-human agency

Concrete non-human agency can be ascribed to animate non-human entities (e.g. *animals, bacteria,* etc.) or to artifacts (e.g. *car, tobacco,* etc.). As the name implies, concrete agents can be said to have a concrete form, regardless of whether the agent is

literally capable of action. Two sub-types, non-human animate agency and non-human artifact agency are discussed below.

The animate non-human agency sub-division of concrete non-human agency includes non-human entities such as animals and bacteria that can be said to have taken action. The sentences below demonstrate two exemplars of this type of agency.

20. The dog came into the room. It ate the sandwich.

Animate non-human agency is characterized by the third person pronouns *it* and *they (*or other non-human pronouns*),* and classifiers which refer to concrete entities capable of taking action. In the case of the pronouns *it* and *they*, this determination requires contextual cues as either pronoun may refer to agents which may either fall into this category or one of the other types of agency.

Linguistic agency can also be ascribed to entities that cannot be said to literally have taken action or may in fact be incapable of action (Kroeger, 2005). Despite the definition of agency, it is not necessary for something to be able to act in order to be assigned linguistic agency. As seen in the examples below non-human agents can include objects that are incapable of action independent of intervention from an animate agent (e.g. *tobacco, cigarettes*, etc.). Examples of non-human artifact agency are below with the agent underlined.

21. Cigarettes are harming my health. They make it hard to breathe.

This type of agency is known as artifact non-human agency and is characterized by third person pronouns, most often *it* and *they,* and classifiers which refer to concrete entities incapable of taking action. As with animate non-human agency, this determination

requires contextual cues in the case of the pronouns *it* and *they*, as either pronoun may refer to agents which may fall into other categories.

Abstract non-human agency

In contrast to concrete non-human agency, abstract concepts such as events, emotions, and processes, even those that cannot be said to have taken action independent of intervention, can be ascribed agency. Abstract non-human agency can be further sub-divided into event agency (e.g. *the meetings*, *weekend*, etc.), process agency (e.g. quitting, smoking, etc.), and emotion/state agency (e.g. *anger*, *addiction*, etc.). These sub-types are further discussed in the sections that follow.

As noted by McGlone and Pfeister (2009), agency may also be assigned to abstract concepts such as time or events as in the examples *the weekend is approaching* and *the time has come* (2009). This subtype of agency is referred to as event or temporal agency and includes phrases and sentences which ascribe agency to events and time. As seen in the example below this subtype is similar in characteristics to the other previously discussed types of non-human agency.

22. <u>Final exams</u> were coming up. <u>They</u> made me nervous.

In this example, the pronoun *they* and the corresponding referent final exams take the role of the agent. The defining feature of event agency is the use of an agent which refers to an event or time, or use of third person pronouns which reference nouns of this type.

In each of the previous examples linguistic agency was assigned to a non-human noun or pronoun. However, linguistic agency may also be ascribed to verbs that have been modified to a noun form. This type of assignment of linguistic agency is called

nominalization (Billig, 2008; Chomsky, 1970; Dowty, 1991). Nominalization turns a verb into a noun, a process into a thing. A nominalized verb effectively takes on the role of the noun subject in the sentence and can be ascribed agency. Sentences with nominalized verbs tend to omit the noun subject and move the nominalized verb into the role of the noun subject in the sentence. The example below demonstrates this type of linguistic agency.

23. Smoking harms peoples' health. It causes cancer and other health problems.

This example shows how nominalized verbs can take on the role of the grammatical agent. Nominalization, or process agency, assigns agency for the effects of a process to the process itself. Process agency is characterized by classifiers created from nominalized verbs and the third-person pronouns including *it* and *they* when, based on contextual cues, these pronouns refer to this category of classifiers

The concept of non-human agency goes beyond just the most apparent examples and can also be assigned to a variety of abstract concepts such as emotion, or, most relevant to the current inquiry, addiction. In the example below, 'addiction' is an example of an abstract concept acting as the agent. As with past examples, the linguistic agents are marked with an underline.

24. My addiction took hold of me. It wouldn't let go.

As seen in the example, states and emotions such as stress, anger, or addiction can take the role of linguistic agents. Similar to the previously discussed categories, in addition to being characterized by classifiers which refer to states of being or emotions,

emotion/state agency also includes examples of third person pronouns including *it* and *they* when these pronouns refer to such classifiers based on contextual cues.

RESEARCH ON LINGUISTIC AGENCY

Research on linguistic agency has been a diverse emerging area of study. In general, research on linguistic agency has followed broad, sometimes overlapping strokes: the comparative study of agency language between cultures and languages (Ahearn, 2001; Fausey & Boroditsky, 2010; Fausey, et al., 2010), the study of the linguistic agency found in spontaneously generated messages and agency's association with other variables (Frazer & Miller, 2008; McGlone & Pfeister, 2009), and the study of message effects stemming from the manipulation of linguistic agency during message construction (Bell, et al., 2013a; Bell, et al., 2013b; Dragojevic et al., 2013; Fausey & Boroditsky, 2010; McGlone, et al., 2012). Research in the latter two categories is most directly relevant to the study of linguistic agency in smoking cessation narratives.

AGENCY IN SPONTANEOUSLY GENERATED LANGUAGE

Researchers have investigated the patterns of agency assignment in spontaneously generated messages and through corpus analysis to investigate patterns of usage and the extent to which these patterns may be related to other variables (Frazer & Miller, 2008; McGlone & Pfeister, 2009). When constructing messages about time, speakers are given the same types of choices for agency assignment as in other types of sentences previously described. It is possible to either assign agency to a human actor or to events. Embodiment theory suggests that "temporal agency assignments reflect conceptual correspondences between time, motion, and emotion" which contribute to

communicators' ascriptions of temporal agency (McGlone & Pfeister, 2009, pp. 3). As noted above, research into temporal agency assignment has investigated this theorized relationship between temporal agency assignments and affect concerning upcoming events (McGlone & Pfeister, 2009). More broadly applied, this suggests that internal states can have an impact on an individuals' patterns of agency ascription. The authors found that communicators tended to produce agency assignments in line with those predicted by embodiment theory. This pattern was first observed in the analysis of a large corpus and then replicated in the analysis of responses concerning positive and negative events solicited for this purpose. Events regarded with negative affect were passively experienced with agency frequently being ascribed to events or time as in "The winter is approaching us" while communicators typically assigned agency to themselves when describing positive events as in "We are approaching the summer." The authors found that not only do these patterns exist, but that agency assignment also affected participant evaluators' perceptions of a speaker's affective orientation towards an event (McGlone & Pfeister, 2009). This indicates that not only are a speakers' patterns of temporal agency assignment related to their affect, but this information also appears to be decoded by those who evaluate the message along similar lines. This suggests that naive interpretation of agency follows similar lines to the grammatical manipulations used in this and other studies of linguistic agency.

Another subset of agency research has focused on the concept of agency as it is related to gender. A recent study analyzed passive and active voice in a corpus of news articles and in narrative responses elicited from participants about violent acts or crimes

(Frazer & Miller, 2008). When describing a crime, writers make structural choices, such as use of active or passive voice, that may reveal underlying attitudes. The sentences below provide an example of this.

25. *In the United States, a man rapes a woman every 6 minutes.*

26. *In the United States, a woman is raped by a man every 6 minutes* (Henley, Miller, & Beazley, 1995 as cited in Frazer & Miller, 2008).

The authors found that writers were substantially more likely to use the passive voice, which tends to ascribe a causal role to the victim, instead of the active voice, which tends to ascribe causality to the perpetrator, when describing crimes which were committed by a man against a woman compared to other types of violent crimes. The authors argue this pattern of preference is reflective of attitudes about these types of crime in society at large that tend to ascribe responsibility to the victim and that this may influence how readers view these crimes (Frazer & Miller, 2008).

STRATEGIC AGENCY ASSIGNMENT AND PERSUASION

While this study sought to investigate how linguistic agency is used in spontaneously generated language, much of the recent quantitative research on agency has focused on the effects of assigning agency to different entities on a variety of dependent variables and on determining what variables may mediate and moderate any effect stemming from such a manipulation. This body of research has largely focused on the effect of agency manipulation on the outcomes of persuasive messages and targets' perceptions of those messages, especially in health contexts (Bell, et al., 2013a; Bell et al., 2013b; Dragojevic et al., 2013; McGlone, Bell, Zaitchik, McGlynn, 2012).

McGlone et al. (2012) manipulated linguistic agency between humans and a virus in a public health message about H1N1. This study indicated assigning agency to the virus (e.g., *H1N1 May Kill Thousands of Americans*) increased perceived threat severity, perceptions of personal susceptibility, and intention to seek vaccination compared to assigning agency human actors (e.g., *Thousands of Americans May Die from H1N1*) (McGlone et al., 2012, p. 744). In a conceptual replication of this study, Bell, McGlone and Dragojevic investigated linguistic agency assignment in similar types of messages concerning HPV (2013b). In addition to the virus/human agency manipulation of the first study, this study manipulated agency between human (e.g., *People guard themselves through vaccination*) and the vaccine (e.g., *Vaccination guards people*) in terms of protecting oneself (Bell et al., 2013b, p. 1178). Messages with non-human (virus and vaccine) agency resulted in HPV being perceived as a more severe threat, the vaccine being perceived as more effective, and participants rating mandatory vaccination more favorably (Bell et al., 2013b). Bell and his colleagues found that effects were strongest when both the vaccine and the virus were assigned agency.

Recent research has extended these findings to non-living health threats. In addition to human/threat agency, Dragojevic et al. (2013) investigated a further division of non-human agency; sentient versus non-sentient threat agency. This study used Dowty's (1991) definition of "sentience" as referring to the ability to feel, perceive, or be conscious, and is one of four properties— along with causation, volition, and movement—that characterize "pure" or "prototypical" grammatical agents (Dragojevic et al., 2013). Sentience is characterized as falling on a continuum from more to less sentient

with linguistic agency constructions being capable of implying greater or less sentience even in cases where the agent itself may not possess actual sentience (Dragojevic et al., 2013). The authors argued that when language that is usually used only for sentient agents is applied to non-sentient agents it may cause people to conceive of that agent as sentient (Dragojevic et al., 2013). To use their own examples "radon gas is seeping into the homes of millions of Americans" is an example of non-sentient threat agency and "radon gas is invading the homes of millions of Americans" is an example of sentient threat agency as the word invading is generally only used to describe sentient agents. Findings indicated that sentient threat agency was associated with higher perceptions of threat severity (Dragojevic et al., 2013).

Some research on agency language has focused on agency's role in perceptions of blame (Fausey & Boroditsky, 2010). Fausey and Boroditsky treated linguistic agency as an independent variable operationalized as a distinction between transitive (referred to as "agentive") and intransitive (referred to as "non-agentive") verb forms, and found that agency manipulation when describing a transgression in a simulated civil case affected the degree to which judges assigned blame to the perpetrator and affected the level of damages they assessed (Fausey & Boroditsky, 2010). Using examples from the study, agentive language such as "She had ignited the napkin" was found to be more likely to result in assignment of blame and higher damages than language such as "The napkin had ignited." (Fausey & Boroditsky, 2010). The study found that descriptions of the transgression that used agentive language resulted in greater perceptions of blame and lower assessments of financial responsibility than messages using non-agentive language.

The authors demonstrated that this effect held up even when participants were exposed to independent information about an event in the form of a video of the infamous Janet Jackson Super Bowl snafu (Fausey & Boroditsky, 2010). Fausey and Boroditsky argue their findings indicate that a message's linguistic agency can affect "how people construe what happened, attribute blame, and dole out punishment" (Fausey & Boroditsky, 2010, pp. 644-645). Similarly, in another study, Fausey, Long, Inamori, and Boroditsky (2010) found that manipulating agency can also change the reporting of eyewitness accounts with people being "more likely to remember the agent of an event when primed with agentive language" and less likely to recall the agent when primed with non-agentive language (Fausey et al., 2010). These findings demonstrate that agency language may have an effect on how message receivers and producers ultimately ascribe responsibility.

AGENCY AND ADDICTION

As discussed previously, extant methods for understanding agency assignment in addiction narratives, such as the described SC coding scheme, have been largely qualitative in approach across various contexts (McCullough & Anderson, 2012; O'Conner, 2000; Zildjaly, 2009). Placement into one of the three categories (claiming, deflecting, and problematizing) in the SC coding scheme is related to linguistic features, but also relies on subjective judgments. While this body of research has generated interesting and useful findings, utility is somewhat limited due to the subjective nature of coding and the use of vaguely defined categories that result in potential difficulty replicating results and limit the ability to test hypotheses.

A quantitative method based on grammatical coding of linguistic agency has the potential to address these concerns and could have increased applicability across a wide variety of contexts beyond addiction and others previously addressed. A coding scheme based on upon linguistic agency research has been developed and is described in the methods section. This approach has the advantage of being composed of more strictly defined categories and being easily replicable. These characteristics make this linguistic approach well suited for hypothesis testing.

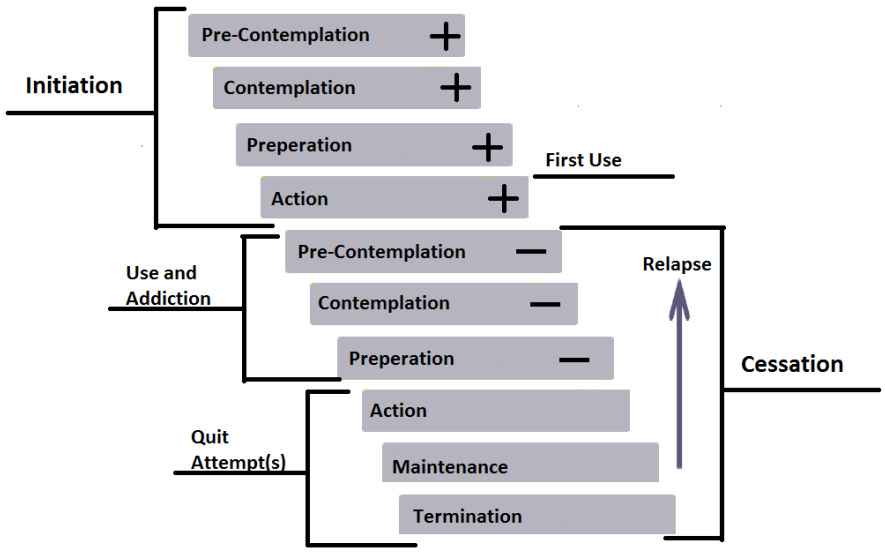
Chapter 3: Hypotheses and Research Questions

As discussed earlier, individuals are thought to organize their lives into narratives and these accounts are seen as providing insight into a persons' subjective perceptions (Baumeister et al., 1990; Gergen, 1998). Research on addiction narratives has investigated linguistic phenomena in patients' recovery program treatment diaries (Stephenson, Lazlo, Ehmann, Lefever, & Lefever, 1997; Stephenson, & Zygouris, 2007) and has indicated there is a link between outcome variables, treatment success and linguistic variables represented in these narratives. Understanding patterns of linguistic agency ascription in treatment narratives has the potential to further inform treatment programs. To this end, a corpus of addiction narratives drawn from recordings made as a part of Voices of Nicotine Addiction and Recovery (VONR), a twelve-step nicotine addiction program similar to those investigated by McCullough and Anderson in their 2012 study, has been constructed. Corpus construction is further detailed in the Methods section.

Previous research has established that an individual's cognitive and affective states are reflected in the assignment of linguistic agency in solicited writing samples (McGlone & Pfeister, 2009). Anderson and McCullough (2012) argue the dominant disease model of addiction and twelve-step programs contribute to a reduction of addict responsibility and agency. The disease model, especially as enacted in archetypical twelve-step programs such as VONR, suggests a particular pattern of agency during the course of smoking initiation, smoking behavior, quit attempts, and finally termination.

Twelve-step programs based on the disease model suggest that prior to exposure and first use, individuals possess agency which is then reduced through the process of becoming addicted (McCullough & Anderson, 2012). It would therefore be expected that personal agency ascription would decline after becoming a smoker (e.g. following the initiation action phase). The following hypothesis concerning patterns of agency language in twelve-step program participant quit narratives was therefore proposed (Prochaska & DiClemente, 1986; Prochaska & Velicier, 1997; Sutton, 2001; West, 2005):

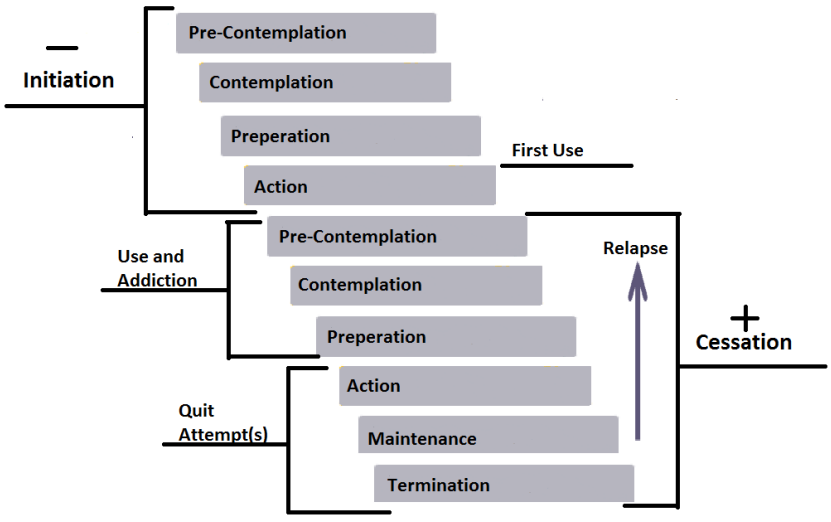
Figure 1. Expected pattern of personal agency assignment described by hypothesis 1.



H1: Personal agency assignment frequency will be higher in narrative segments describing smoking initiation pre-contemplation, contemplation, preparation, and action stages than in segments describing pre-contemplation, contemplation, and preparation stages of cessation.

The disease model and twelve-step programs emphasize the loss of control to addiction during the course of substance use. Use and addiction takes place during the cessation pre-contemplation stage through the action stage of cessation. Emphasis is also placed on the relinquishment of agency to a higher power during the course of treatment and a reliance on the procedures set forth by the twelve-step program (Alcoholics Anonymous World Services, 1981). It would therefore be expected that the stages of use would be characterized by abstract non-human agency assignment to the addiction and the substance itself, and cessation efforts would be characterized by ascription of agency to a higher power or other outside forces such as the twelve-step program. This expected pattern is described by hypothesis two.

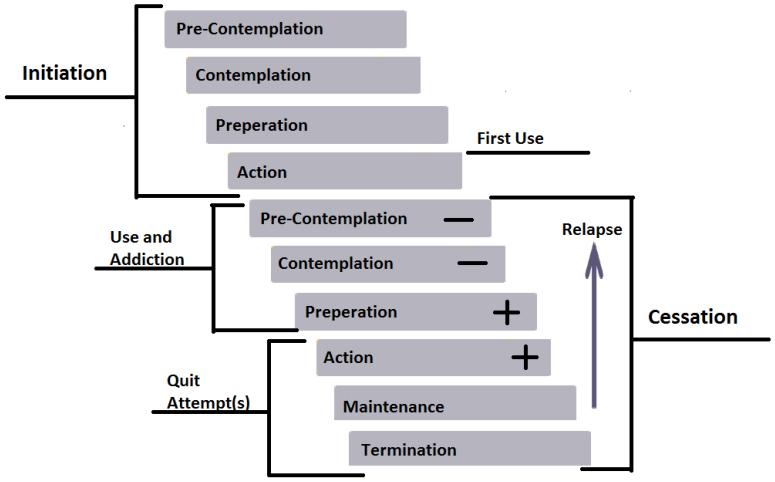
Figure 2. Expected pattern of non-human agency assignment described by hypothesis 2.



H2: Non-human agency assignment frequency will be higher in narrative segments describing cessation than in segments describing initiation stages.

Within the stages of change model, individuals generally are most likely to seek intervention, whether in the guise of a twelve-step program or in some other form, during the preparation and action steps of smoking cessation. Pre-contemplation and contemplation stages are likely to occur prior to involvement with outside influences such as the twelve-step program which further emphasize lack of control. Additionally, research has shown that self-efficacy is lower during cessation preparation and action stages than earlier stages of smoking cessation (Prochaska & Velicier, 1997). Previous research into linguistic agency has indicated that affect is represented in the way that individuals ascribe agency in solicited writing samples (McGlone, & Pfeister, 2009). As discussed in the review of literature, it is expected that agency ascription is impacted by other internal states, especially self-efficacy given strong conceptual similarities with linguistic agency. It would therefore be expected that ascription of abstract agency to the addiction and the substance itself would increase during preparation and action stages (as well as during relapses to these stages) when compared to pre-contemplation and contemplation stages of cessation. This rationale motivated the following hypothesis:

Figure 3. Expected pattern of non-human agency assignment described by hypothesis 3.

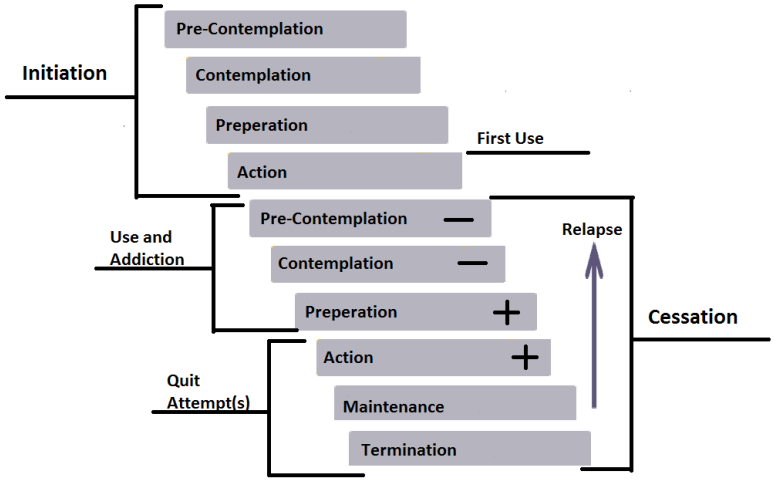


H3: Non-human agency assignment frequency will be higher in narrative segments describing cessation preparation and cessation action stages than in segments describing cessation pre-contemplation and contemplation stages.

Given the emphasis placed on relinquishing control to a higher power and the emphasis on relying on other people such as a sponsor, participants in twelve-step programs would be expected to demonstrate higher levels of non-personal agency language usage during the time leading up to successful cessation. It is during the preparation stage participants are generally first exposed to the twelve-step approach, the corresponding emphasis on the disease model, and the relinquishment of control. Research on the transtheoretical model has also shown that shows self-efficacy dips during these stages (Prochaska & Velicier, 1997). It was therefore expected that, as described in the hypothesis below, individuals would exhibit greater frequency of non-personal human agency assignment (in the form of assignment to their chosen higher

power) during these stages and during relapse (which is a return to one of these previous stages) than during the pre-contemplation and contemplation stages of cessation.

Figure 4. Expected pattern of non-personal human agency assignment described by hypothesis 4.

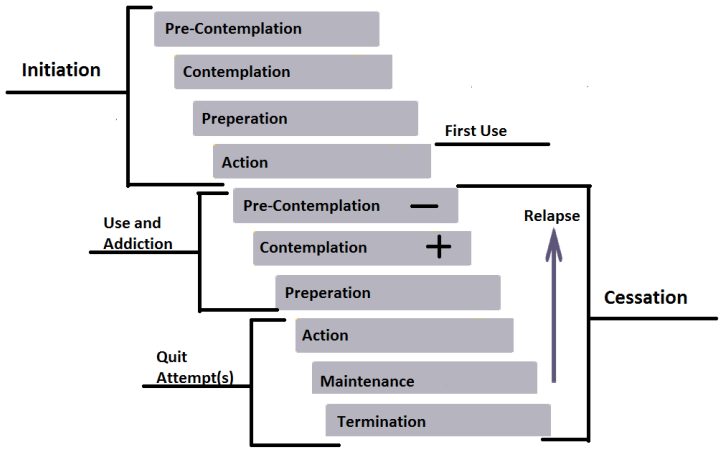


H4: Non-personal human agency assignment frequency will be higher in narrative segments describing cessation preparation and action stages than in segments describing cessation pre-contemplation and contemplation stages.

At the outset of the cessation pre-contemplation stage, reported self-efficacy is generally low (DiClemente et al., 1991). Reported self-efficacy then tends to rise during each of the following two stages (contemplation and preparation) leading to active attempts to quit ((DiClemente et al., 1991). Perhaps surprisingly, self-efficacy then tends to fall during the action stage before increasing again following cessation (Prochaska & Velicier, 1997). It has been demonstrated that reported self-efficacy is highest during

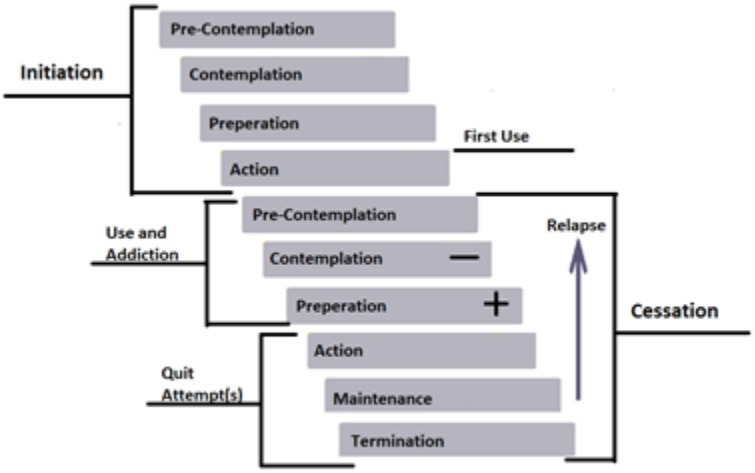
cessation maintenance and termination with nearly complete ratings of self-efficacy during the termination stage (Prochaska & Velicier, 1997). These findings suggest a specific pattern of agency ascription in narrative sections describing the stages of cessation. The several hypotheses were proposed to describe this expected pattern.

Figure 5. Expected pattern of personal agency assignment described by hypothesis 5.



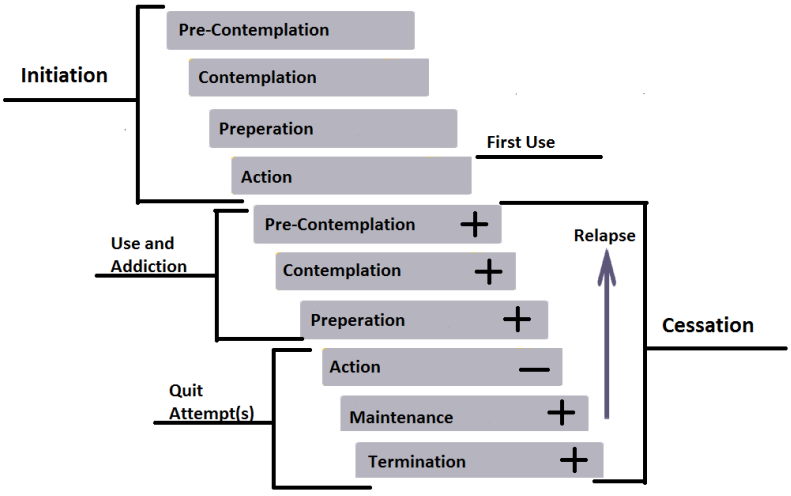
H5: Personal agency assignment frequency will be lower in narrative segments describing the cessation pre-contemplation stage than in segments describing cessation contemplation.

Figure 6. Expected pattern of personal agency assignment described by hypothesis 6.



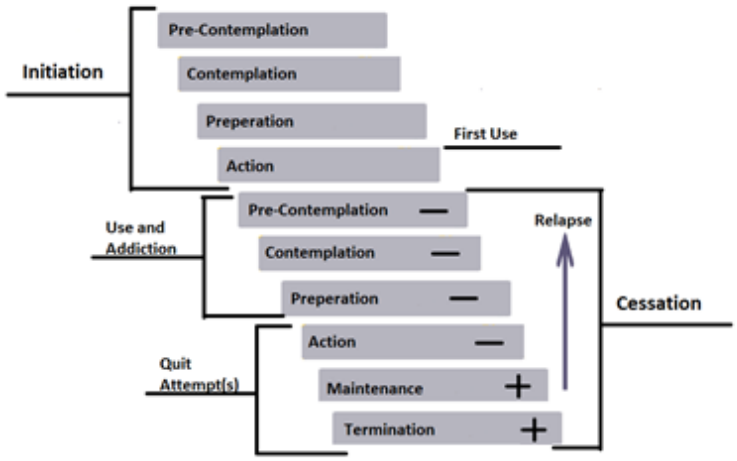
H6: Personal agency assignment frequency will be lower in narrative segments describing the cessation contemplation stage than in segments describing cessation preparation.

Figure 7. Expected pattern of personal agency assignment described by hypothesis 7.



H7: Personal agency assignment frequency will be lower in narrative segments describing the cessation action stage than in segments describing all other cessation stages

Figure 8. Expected pattern of personal agency assignment described by hypothesis 8.



H8: Personal agency assignment frequency will be higher in narrative segments describing the cessation maintenance and termination stages than narrative segments describing cessation pre-contemplation, contemplation, preparation and action stages.

Chapter 4: Method

Summary of Method

This study sought to explore patterns in linguistic agency assignment in spontaneously generated language in smoking cessation narratives over the course of stages of behavior change in order to address the proposed hypotheses. To this end, a coding procedure based on research into linguistic agency assignment was developed and was applied to a corpus of ex-smokers' quit narratives. Details of the corpus, corpus preparation, the coding scheme, and the analysis are described below.

Corpus

The corpus for this study is composed of recordings of quit narratives from Voices of Nicotine Recovery (http://www.voicesofnicotinerecovery.com/), a publicly available online support group website for nicotine addicts associated with the Nicotine Anonymous twelve-step program. Voices of Nicotine Recovery (VONR) was formed in 2004 by a recovering nicotine addict in order to provide an online forum and support structure for those attempting to quit smoking or maintain cessation who may not have access to more conventional in-person meetings. According to the group's website, "VONR's primary purpose is to offer support to those who are trying to gain freedom from nicotine (Voices of Nicotine Recovery, 2016)." One of the services provided by VONR is use of publicly accessible recordings of members who report successfully quitting telling their stories of smoking initiation and cessation. These recordings are

provided by VONR in order to support individuals who are currently attempting to quit or maintain sobriety.

Narratives were recorded by members of this group primarily during web based virtual meetings. Available recordings range from 2005 to early 2016 and tend to consist of single speakers telling largely chronological stories of their addiction to cigarettes from inception to the time of the recording. At the time of corpus development, there were 202 listed quit narrative recordings available on VONR's website; however, review indicated that 55 recordings were no longer available at the time of corpus construction, leaving 147 recordings. Recording length varies, but most are between approximately 25 minutes and 40 minutes in length. Each speaker claimed to be nicotine free at the time the recordings were made, with varying reported lengths of time since quit.

A subset consisting of 40 recordings was drawn from this corpus for analysis from the Voices of Nicotine Recovery Speaker Shares webpage (http://www.voicesofnicotinerecovery.com/speaker-shares). Narratives were selected or excluded based on several criteria. A minimum length of 25 minutes was set to ensure sufficient word counts. Recordings were excluded in cases where the topic strayed substantially from the speaker's addiction or quit attempt or did not follow a roughly chronological narrative format. Chronological narrative format was defined as including discussion of the start of the addiction (e.g. first cigarette), time of use and addiction, and finally cessation and maintenance. Some recordings were also excluded based on recording quality. Given that some recordings were made by the same individual, only recordings with distinct names were included. In these cases, the other criteria were

applied to determine which recordings to include. If multiple recordings with the same listed name qualified for inclusion, the most recent recording that met all other criteria was included for consideration.

The criteria above resulted in a final list of 84 recordings, with 50 (59.52%) recorded by females and 34 (40.48%) recorded by males. A subset of 40 of these recordings were randomly selected from this list composed of 23 (57.50%) recordings by females and 17 (42.50%) recordings by males, a similar proportion to the group created using the exclusion criteria. Other demographic information was not consistently available.

The selected recordings were transcribed verbatim with no editing of spoken content, and any repetition transcribed. This approach helped to ensure that language features that might be omitted if normal transcription procedures were followed were preserved.

Ten percent (four distinct transcripts) of this corpus were compared to the original recordings and reviewed for accuracy of transcription. Perfect accuracy was sought for transcription of subjects, objects and verbs as these parts of speech were the primary focus of the proposed hypotheses. Transcriptions were reviewed and revised until the desired level of accuracy was reached. The review process was then repeated with another randomly selected subset in order to confirm accuracy. The final version of the corpus was then compiled and prepared for coding.

Corpus preparation

In order to facilitate coding of the variables of interest, the corpus was prepared by the author by identifying passages on the topic of smoking, identifying the stages of behavior change represented by each passage, breaking the text into codable "agent phrase" units that contain the necessary grammatical parts of speech for identification of the phrase's agent, and, finally, identifying the agent of each of these units by determining the verb type. This process resulted in a list of identified agents and their associated main verbs for each of the recordings. A total number of 19, 974 agents were identified for coding. This list was then coded by multiple coders as described below in the Coding Procedure section. A full description of each corpus preparation procedure can be found below followed by descriptions of the agent coding procedures.

Agent phrases

To facilitate coding of agency under this coding scheme, the corpus was parsed into units containing the necessary grammatical features for determining the agent of each noun/verb phrase. These units were composed of a subject, verb, and indirect or direct object if one was present. This unit will be referred to as an "agent phrase" for the purpose of this study. Each agent phrase was generally composed of a complete sentence, other than in cases where a sentence contained multiple agent phrases, or was incomplete due to the nature of spoken language. In some cases, portions of a given agent phrase were contained within another distinct agent phrase. In each of these cases, each agent phrase was parsed separately, even if the agents were connected to the same main verb.

The parsed units were recorded sequentially and matched to the relevant portions of the transcriptions in order to provide the necessary context for proper coding.

Verb type and voice coding

In order to identify the agent of a given sentence, it is necessary to identify the verb type and the voice of the construction. Verbs can be defined as "action words" or words about state of being used to "say something about some person or thing" (Crystal, 1995). Coding focused on the main verb of each agent phrase. Main verbs are those which perform the action or being of the sentence (Crystal, 1995). Coding divided verbs into three main types; linking/being verbs, transitive verbs, and intransitive verbs. Of these, transitive and intransitive verbs denote action and as a group are referred to as action verbs. Action verbs can be defined as describing an act performed by the subject. Transitive verbs are characterized by transmission of action from the subject to the object of the sentence. The object is defined as the entity acted upon by the subject in sentences with transitive verbs. However, not all sentences have an object. Intransitive verbs, for example, do not take an object (Crystal, 1995). In the first example below, *person* is the subject, *smokes* acts as a transitive verb, and *cigarette* is the object. It should be noted that many verbs can act as either transitive or intransitive verbs. In the second example, *person* is again the subject and smoked is the verb, however, the sentence has no object. Action verbs were coded as transitive or intransitive based on the above operationalization.

27. The person smokes a cigarette.

28. The person smoked.

Agency can be ascribed to any noun entity that is completing an action. This ascription is the result of the interplay between the verb, subject and object in a given phrase. As discussed in the review of literature, a linguistic feature with important relevance to the grammatical determination of agency is voice. Phrases with transitive verbs can be constructed in either active or passive voice. In common usage, most sentences are composed using active voice. In these cases, the subject completes the action of a verb. A given sentence or phrase is in the active voice when the verb transmits action from the subject to the object. A phrase is in the passive voice when the verb acts on the subject (Crystal, 1995). Transitive verbs were further coded as possessing active or passive voice based on this definition. Agent phrases in which the subject was performing the action of the verb were coded as having active voice. Agent phrases in which the verb was acting upon the subject were coded as having passive voice.

Linking verbs are distinct from action verbs. Linking verbs are also known as state of being verbs. These verbs can be understood as conveying additional information about the subject as opposed to indicating action (Crystal, 1995). The most common examples include conjugations of the verb '*to be'* such as '*am'*, '*is'*, '*are'* and '*was'*. Linking and being verbs do not indicate action and are generally not considered to indicate linguistic agency, instead this type of verb indicates a state of being or serves a functional purpose in the construction of a grammatical sentence not associated with action. There are some verbs, such as '*feel'* which can function either as linking being verbs or as action verbs. Verbs such as '*seems'* and '*appears'*, which can function in the same way, are also considered linking verbs when used in specific contexts. In the

example below, the verb '*felt'* operates as a linking verb in the first sentence and as an action verb in the second sentence. In the first case, no action is taken, however in the second case 'felt' operates as a transitive verb.

29. I felt terrible.

30. I felt the pack of cigarettes in my pocket

Verb coding was primarily used as an inclusion variable and to determine which part of speech was operating as the agent within a given agent phrase. As linking and being verbs are not generally associated with agency, agent phrases with a linking/being verb operating as the main verb were excluded from further coding.

Certain "edge cases" also warrant discussion. In many grammatical constructions a single agent and a single verb are clearly connected, as is the case in the first example below, however, there are a number of potential cases where sentence construction does not create such a simple one to one connection between agent and verb. Agents may be shared by multiple verbs as is the case in the second example below and verbs may be shared by multiple agents as in the third example. In these cases, each agent was coded based on the type of the verb to which it was connected (transitive, intransitive, or linking/being), and was counted once for each action ascribed.

31. I smoked a cigarette.

32. I smoked, drank, and did drugs.

33. *My brother and I smoked cigarettes.*

Given that speakers often do not follow rules of grammar in a strict way, determining agency can be further complicated when coding the spoken word. Spontaneously

generated speech often includes tangential asides, non-standard grammar, aborted sentences, and casual omissions that can result in subjects and their associated verbs being separated. It is possible for either of the two main component parts of speech (verb and subject) in the agent phrase to be omitted. In the first example below the subject has been omitted from the underlined portion. In the second example, we can see how aborted sentences can result in agents that do not correspond to verbs. The orphaned subject is underlined.

34. …. Time went on, <u>smoked and drank even more.</u>

35. <u>I, I…</u>Then my addiction got really bad.

It is also possible for an agent and an associated verb to be separated by additional clauses that may also themselves be complete grammatical units. Given these and other complications seen in spontaneously generated speech, some agent phrases did not contain all elements. In these cases, features that were present were coded and other features were marked as "omitted." In cases where omission of certain elements of the agent phrase made it impossible to code remaining elements and context was insufficient, the features present were marked as "uncodable." In cases where missing elements were heavily implied by contextual information, the implied agent was recorded.

Agent/verb identification

A list of identified agents and the associated main verb was produced based on verb type coding. Identification of the agent was based on coding of the associated verb as described above. In agent phrases with active voice the subject of the agent phrase was coded as the agent. In agent phrases with passive construction as operationalized above,

coding instead considered the object of the agent phrase. This resulted in a list of agents and associated main verbs that met the previously described inclusion criteria. This list was ordered and numbered in a way that corresponded with a prepared version of the transcripts that had each relevant agent phrase delineated to allow reference in cases where agent coding required contextual cues.

Topicality coding

Topicality operated as an additional inclusion variable. Passages of text that pertained to becoming a smoker, smoking, health effects of smoking, quit attempts, and cessation were considered topical and were included for coding. While each of the narratives primarily focused on smoking and cessation, there were frequent asides about other topics and functional communication such as thanking a facilitator or attending to background activity that were excluded from coding. Text that was coded as non-topical was marked as such, but was not removed from the prepared transcripts in order to preserve context in cases where grammatical features were implied, but not clear from the information present in the prepared lists.

Narrative stage coding

The transtheoretical model (also known as the stages of change model) proposed by Prochaska and DiClemente was applied to delineate the transcripts into stages of nicotine use (Prochaska and DiClemente, 1983). As previously discussed in the literature review, this model is a primary way of conceptualizing smoking behavior change among researchers investigating smoking cessation (Sutton, 2001; West, 2005). Given the transthoretical model's wide applicability to behavior change, this study seeks to apply

the model in a cyclical way to describe the two distinct, but related, behavioral processes of smoking initiation and smoking cessation. The resulting ten narrative stages range from the time prior to initiation to the time following termination. Stages of behavior change are not necessarily ordered chronologically, but are presented below in the generally accepted order of forward progression towards cessation. Furthermore, given that the corpus was composed of unscripted retrospective narratives, narrative stages and the time period under discussion often shift in an unordered fashion.

Text remaining after coding for topicality was coded as belonging to a particular stage using the operational definitions in the chart below. These definitions were adapted from the most current revisions to the transtheoretical model, however emphasis on specific timeframes, with the exception of the Cessation Maintenance stage, were removed due to the lack of reliable chronological information in the corpus. Timeframes associated with Cessation Maintenance were included, as being nicotine free for six months is the primary distinction between Cessation Maintenance and the latter portions of the Cessation Action stage.

Previous critiques have noted that lines drawn between stages can be somewhat arbitrary and some stages may not be mutually exclusive (Herzog et al., 1999; Sutton, 2001; West, 2005). Passages of text that could not be coded along this dimension were marked as “uncodable” and were excluded from analysis. As noted in previous research, pre-contemplation and contemplation are distinguishable from one and other primarily in terms of internal states or specific arbitrary time periods that were not always explicitly distinguishable within the selected narratives (Sutton, 2001; West, 2005). Similarly,

preparation and action stages were occasionally difficult to distinguish from each other through narrative content. The Maintenance and Termination stages were collapsed during coding as narrative content provided insufficient information for delineation and collapsing did not affect any proposed hypotheses.

Table 1. Operational definitions of stages of smoking initiation and cessation.

Narrative Part	Descriptions
Pre-contemplation (Initiation)	This stage is characterized by a lack of intention or interest in beginning to smoke.
Contemplation (Initiation)	The Initiation Contemplation stage is distinguished by the individual's awareness of perceived positives associated with smoking cigarettes and perceived negatives of abstaining (e.g. social pressures, stress relief, etc.). The individual may still be unsure of whether s/he will begin smoking and has not yet made a commitment.
Preparation (Initiation)	The Initiation Preparation stage is associated with a decision to begin smoking. At this stage, however, behavior change has not occurred. This stage is often quite brief and may be skipped entirely.
Action (Initiation)	This stage is characterized by steps towards becoming a smoker which include attempts, but not regular use. As it the case with the previous stage, this step is often quite brief.
Pre-Contemplation (Cessation)	Cessation Pre-contemplation is the first stage of change following the initiation of smoking behavior and is associated with a lack of intention or interest in quitting smoking. Individuals in this stage may be aware of the negative impacts of their addiction to cigarettes, but they still see the positives as outweighing them. During this stage, individuals are actively smoking without intention to quit.
Contemplation (Cessation)	Cessation Contemplation can be identified by an awareness of the negatives associated with smoking and cigarette addiction. The individual may still be unsure of whether they will quit smoking and has not necessarily yet made a commitment to quitting.
Preparation (Cessation)	The Cessation Preparation stage is characterized by a commitment to quitting smoking, however, behavior change has not yet occurred. This is often when individuals will seek out assistance or addiction services such as Nicotine Anonymous or VONR. During this stage, the individual is not yet actively attempting cessation.
Action (Cessation)	The Cessation Action stage is associated with the individual taking steps towards smoking cessation, but not complete termination. This stage is often the briefest as many move quickly to maintenance or relapse to a previous stage.
Maintenance (Cessation)	Cessation Maintenance is identified as successful termination defined as having lasted at least six months without interruption by relapse. This is not necessarily the final quit attempt described as it is possible to reach this stage and later relapse.
Relapse (Cessation)	Relapse is a return to smoking after an attempt at cessation (action or maintenance). Passages that contain language referring to smoking behavior occurring chronologically after phrases that have been coded as action or maintenance will be coded based on the criteria for the previously described stages of cessation, but will also be marked as Relapse (Cessation).
Termination (Cessation)	Termination is defined as a complete lack of temptation to return to the previous pattern of behavior. This stage is associated with high to complete levels of self-efficacy. This stage will be collapsed into the Cessation Maintenance stage for analysis as it is not possible to delineate the difference between these stages aside from internal states.

Agent type coding

Agents were coded as classifiers or pronouns, as singular or plural, as first, second or third person, and as human or non-human. While it was possible among human agents to delineate all relevant agency subtypes (e.g. personal, shared, or other) based on this coding, non-human agents were further coded as concrete or abstract as this distinction was not captured by grammatical coding alone. In cases where the agent of the sentence was omitted or implied, but could be clearly determined based on contextual cues, coding was conducted using the procedure described below. If coding was not possible based upon context, the agent type was coded as "uncodable".

Pronouns and classifiers

Agents were coded as either classifiers or pronouns. For the purpose of coding, pronouns were defined based along grammatical lines as "a word used instead of a noun or noun-equivalent [i.e. a word which is acting as a noun]" that does not have a specific referent outside of context (Crystal, 1995). There are several sub-types of pronouns (subjective case, objective case, and possessive case) only two of which (subjective case and objective case) generally took positions relevant to coding. A list of the most common subjective and objective case pro-nouns is included in the appendix (Appendix A). However, due to the often non-grammatical nature of speech, occasional instances of possessive case pronouns taking relevant positions were observed. The set of common pronouns contained in the appendix should not be considered exhaustive.

The nouns that pronouns replace are referred to as classifiers. Classifiers are nouns that signify a specific object or concept such as 'cigarettes', 'father', 'John', or

'smoking'. Proper nouns, such as names, which refer to a unique entity or entities, are a subset of classifiers. Classifiers were defined as all non-pronoun subject or object nouns for the purpose of this coding scheme.

Singular and plural

Following the same convention, singular and plural were defined based on the definition provided by the *Encyclopedia of the English Language* for the grammatical terms as denoting "one" person or thing and denoting "more than one" person or thing respectively (Crystal, 1995). Lists of the most common singular and plural pronouns can be found in the appendix (Appendix B). Indefinite pronouns (e.g. *anything*, *anyone)* can be singular or plural. In these cases, coding was based on contextual cues and any grammatical features that signified whether the subject was plural or singular. Indicators included verb conjugation (e.g. *is*, *are*; *smoke*, *smokes*) and other patterns of pluralization. Instances where this determination could not be made were marked as "uncodable". In the English language, the second person pronoun 'you' can also operate as either plural or singular, however, grammatical markings are not always as clear as those described above. The second person therefore was not coded as singular or plural. In contrast to pronouns, due to the nature of classifiers, no comprehensive list of examples could be produced. Common proper nouns and other types of classifiers were coded as plural or singular based on the above stated definitions, verb conjugation, and rules of pluralization.

First, second, and third person

Pronoun and classifier agents were further coded as first, second, or third person. Pronouns were coded based on part of speech, while classifiers were coded based on context and the coder's semantic knowledge. First person nouns and pronouns refer to the self or a group of which the self is a part and commonly include 'I' (singular), and 'we' (plural). A second person noun or pronoun refers to the audience being addressed, such as an interlocutor or a reader. As stated above, in English, the plural and singular form of the second person are both represented as 'you'. The third-person can be defined in opposition to the first and second person forms. Third person refers to a subject other than the speaker or audience. Common third person pronouns include 'he' (singular), 'she' (singular), 'it' (singular), 'one' (singular), 'they' (plural), 'that' (singular), 'this' (singular) and 'those' (plural). There are also a number of other less common third person pronouns (Crystal, 1995).

Human and non-human

Both pronouns and classifiers were also coded as referring to either a human or non-human agent. Common human pronouns include 'I', 'we', 'they', 'he', 'she', 'everybody', 'everyone', and 'one'. The most common non-human pronouns include 'it', 'this', 'that', and 'they'. Various forms of indefinite pronouns such as 'everything' and 'anything' can also be included in this category. It should be noted that some pronouns such as 'they' can refer to either human or non-human subjects. Coding of these instances was based on contextual cues. It should also be noted that while the above lists of pronouns provided strong guidelines, there were as noted by Crystal (1995) cases where

human pronouns were used in reference to non-human actors. Instances of the opposite were also found to occur where human actors were referred to using non-human pronouns. Contextual cues were used to the extent possible and resulted in some coding that runs counter to the lists as provided. Some examples were noted where context was misleading. It is likely that this resulted in lower levels of reliability for common agents associated with this type of language. Coding of classifiers as human or non-human could not rely on word lists, but instead was based on context and common lexical knowledge among the coders. Agents that were coded as non-human were further coded as *concrete* or *abstract*. Concrete agents were defined to include animate and inanimate objects with physical form (e.g. *animal, cigarette, people*). Abstract agents were defined to include processes, states, emotions, and events (e.g. smoking, the program, addiction).

Resulting agent categories

Coding along the described dimensions was used to create twelve distinct categories of agents; human first person singular, human first person plural, human second person (plural and singular), human third person singular, human third person plural, abstract non-human third person singular, concrete non-human third person singular, abstract non-human third person plural, and concrete non-human third person plural agents. Agency types were collapsed into three agency categories relevant to the hypotheses.

For the purpose of testing the stated hypotheses, personal human agency was defined as including human first person singular and human first person plural agent types. Non-human agency was defined as including agent phrases containing abstract

non-human third person singular, concrete non-human third person singular, abstract non-human third person plural, and concrete non-human third person plural agents. Finally, non-personal human agency was defined as any agent phrases including human second person (plural and singular), human third person singular, and human third person plural agent types.

Reliability testing

Agency coding was conducted by three coders. The prepared list of agents was used to assess the reliability of the codebook across these coders. A subset of four transcripts was randomly chosen for this purpose. Coders were given a code book based on the definitions of coded variables provided in the previous section. Following a review of the codebook, each coder was provided with a prepared copy of each of the four selected transcripts and the corresponding agent/verb lists. The selected subset included a total of 2052 agent phrases and was coded for agent type by each coder independently. Agent type coding was assessed for intercoder reliability using Fleiss' Kappa using a desired level of reliability of .8 (Landis & Koch, 1977). Tests indicated the coding scheme was highly reliable and no codebook revision was necessary (κ=.930). The remaining transcripts were randomly assigned to each of the coders. Coding for analysis for transcripts used in reliability testing were randomly selected from the previous completed code sheets.

Chapter 5: Results

The proposed hypotheses were tested using a series of one-way within subjects planned comparison ANOVAs with Narrative Stage or groupings of multiple narrative stages acting as the independent variable. All tests were conducted using an alpha level of .05. Cohen's d was used to test effect sizes (Cohen, 1988). The dependent variable for H1, H5, H6, H7 and H8 was personal agency assignment rate; for H2 and H3 the dependent variable was non-human agency assignment rate; and for H4, it was non-personal human agency assignment rate. The frequency of agency assignment for all coding categories in a transcript was summed and transformed (divided by the total number of topical agent phrases in that narrative stage and multiplied by 100) to indicate the agency assignment rate per 100 assignments. In cases where groupings of stages were being compared, grouped stages were summed and transformed (divided by the total number of stages being grouped). This approach is analogous to a common linguistic coding metric which uses word counts in place of agent phrases in a similar fashion (e.g., McGlone & Pfiester, 2015). The total count did not include any content that was excluded during corpus preparation as described in the methods section. Tests on the main effect of narrative stage rate of agency assignment indicated significant differences in agency assignment between stages ($F(16,624) = 23.973$, $p < .001$, Cohen's $d = .35$). Additional testing was therefore completed to assess the proposed hypotheses. Means for rate of each agency assignment type by narrative stage are displayed below.

Table 2. Mean rate of agency assignment per 100 assignments (SD) by narrative stage.

	Human Personal Agency	Human Non-personal Agency	Non-human Agency
Initiation Pre-Contemplation	20.12 (30.61)	12.16 (20.56)	2.72 (6.50)
Initiation Contemplation	12.21 (23.31)	9.22 (18.05)	3.57 (9.01)
Initiation Preparation	5.06 (18.09)	2.26 (8.25)	0.18 (1.13)
Initiation Action	58.58 (31.56)	19.52 (18.06)	6.91 (6.95)
Cessation Pre-Contemplation	58.43 (24.03)	23.13 (16.24)	10.94 (8.97)
Cessation Contemplation	59.73 (23.87)	19.82 (12.32)	10.45 (8.48)
Cessation Preparation	54.65 (30.35)	17.90 (14.93)	7.44 (6.18)
Cessation Action	65.64 (9.43)	20.35 (8.14)	14.01 (5.06)
Cessation Maintenance	66.67 (20.96)	14.65 (10.11)	11.18 (6.62)

Hypothesis 1 predicted that personal agency assignment rate would be higher in narrative segments describing smoking initiation pre-contemplation, contemplation, preparation, and action stages than in segments describing pre-contemplation, contemplation, and preparation stages of cessation. While hypothesis testing found a significant difference ($F(1,312) = 101.74$, $p = >.0001$, Cohen's $d = .66$) in human personal agency rate between initiation pre-contemplation, contemplation, preparation, and action stages ($M = 23.99$, $SD = 13.49$) and those narrative segments describing the pre-contemplation, contemplation, and preparation stages of cessation ($M = 57.60$, $SD = 17.02$) the difference was not in the proposed direction and the null was not rejected.

Hypothesis 2 stated non-human agency assignment rate would be higher in narrative segments describing cessation than in segments describing initiation stages. Testing of combined stages for H2 found significantly higher frequencies of non-human agency assignment ($F(1,312) = 5.014$, $p = .0259$, $d = .26$) during narrative segments describing cessation ($M = 10.81$, $SD = 3.70$) than in segments describing initiation stages ($M = 3.34$, $SD = 3.31$). The null hypothesis was rejected.

Hypothesis 3 proposed that the non-human agency assignment rate would be higher in narrative segments describing cessation preparation and cessation action stages than in segments describing the cessation pre-contemplation and contemplation stages. Testing of H3 found no significant differences in rates of non-human agency assignment ($F(1,312) = .01$, $p = .992$) between narrative segments describing cessation preparation and cessation action stages ($M = 10.73$, $SD = 3.62$) and those segments describing cessation pre-contemplation and contemplation stages ($M = 10.69$, $SD = 6.49$).

Hypothesis 4 posited that the non-personal human agency assignment rate would be higher in narrative segments describing cessation preparation and action stages than in segments describing cessation pre-contemplation and contemplation. Testing of combined stages did not find significant differences in rates of non-personal human agency assignment ($F(1,312) = .497$, $p = .4814$) between narrative segments describing cessation preparation and cessation action stages ($M = 19.13$, $SD = 9.96$) and cessation pre-contemplation and contemplation stages ($M = 21.48$, $SD = 10.93$).

Hypothesis 5 stated that personal agency assignment rate would be lower in narrative segments describing the cessation pre-contemplation stage than in segments

describing cessation contemplation. Testing found no significant differences in rates of human personal agency assignment ($F(1,312) = .151$, $p = .697$) between narrative segments describing cessation pre-contemplation ($M = 58.43$, $SD = 24.03$) and segments describing cessation contemplation ($M = 59.73$, $SD = 23.870$), therefore the null hypothesis was retained.

Hypothesis 6 stated that personal agency assignment rate would be lower in narrative segments describing the cessation contemplation stage than in segments describing cessation preparation. Hypothesis testing found no significant differences in rates of human personal agency assignment ($F(1,312) = 2.318$, $p = .129$) between narrative segments describing cessation contemplation ($M = 59.73$, $SD = 23.87$) and segments describing cessation preparation ($M = 54.65$, $SD = 30.35$), therefore the null hypothesis was retained.

Hypothesis 7 predicted that personal agency assignment rate would be lower in narrative segments describing the cessation action stage than in segments describing all other cessation stages. While hypothesis testing did not indicate a significant difference in rate of human personal agency assignment ($F(1,312) = 2.995$, $p = .085$) between narrative segments describing the cessation action stage ($M = 65.64$, $SD = 9.43$) and segments describing cessation pre-contemplation, cessation contemplation, cessation preparation, or cessation maintenance ($M = 59.87$, $SD = 13.63$) differences did approach significance. Tests between individual stages were therefore run. While there were significant differences in human personal agency assignment rate ($F(1,312) = 4.68$, $p = .031$) between narrative segments describing the cessation action stage ($M = 65.64$, $SD =$

9.43) and segments describing cessation pre-contemplation (M = 58.43, SD = 24.03) differences were not in the hypothesized direction. No significant differences were found in the human personal agency assignment rates ($F(1,312) = 3.145$, $p = .077$) between narrative segments describing the cessation action stage and segments describing cessation contemplation ($M = 59.73$, $SD = 23.87$). While significant differences were found in human personal agency assignment rate ($F(1,312) = 3.30$, $p = .0702$) between narrative segments describing the cessation action stage and segments describing cessation preparation ($M = 54.65$, $SD = 30.35$) the difference was not in the proposed direction. Finally, tests did not indicate significant differences in rates of human personal agency assignment ($F(1,312) = .0954$, $p = .758$) between narrative segments describing the cessation action stage and segments describing cessation preparation ($M = 66.67$, $SD = 20.96$). Hypothesis 7 was not supported and the null hypothesis was retained.

Finally, Hypothesis 8 predicted that personal agency assignment rate would be higher in narrative segments describing the post-quit stages of cessation maintenance and termination than in narrative segments describing the period while subjects were smoking including the cessation pre-contemplation, contemplation, preparation and action stages. Tests indicated significantly higher rates of human personal agency assignment ($F(1,312) = 4.48$, $p = .035$, $d = .25$) during narrative segments describing the cessation maintenance stage ($M = 66.67$, $SD = 20.96$) than segments describing the other cessation stages ($M = 59.611$, $SD = 14.12$) therefore, the null hypothesis was rejected.

Chapter 6: Discussion

Research describing patterns of linguistic agency has the potential to improve treatment programs and facilitate investigation of various models of addiction (McCullough & Anderson, 2012). This study found different patterns among the investigated categories of agency assignment, and partial support for predicted patterns of agency assignment across the stages of smoking initiation and cessation. Researchers have suggested that narratives can provide insight into internal states and that variations in linguistic agency assignment can be indicative of affect (Baumeister et al., 1990; Gergen, 1998; McGlone & Pfeister, 2009). The disease model and twelve-step programs such as VONR emphasize a loss of control to addiction during the course of substance use and addiction making an understanding of how linguistic agency functions in the context of addiction particularly valuable. Emphasis is often placed on the relinquishment of agency to a higher power and a reliance on the procedures set forth by the twelve-step program during the course of treatment (Alcoholics Anonymous World Services, 1981). It was therefore expected the portions of the corpus describing nicotine use would be characterized by abstract non-human agency assignment to the addiction and the substance itself, and cessation efforts would be characterized by ascription of agency to a higher power or other outside forces such as the twelve-step program.

As suggested by the disease model of addiction (Prochaska & Velicier, 1997), non-human agency assignment was more prevalent when participants described experiences during their period of nicotine use. In the disease model, addiction is

conceived as robbing the addict of self-control. The observed increase in non-human agency assignment could be considered indicative of loss of agency to cigarettes and nicotine addiction. This interpretation is further supported by observed patterns of personal agency in narrative sections describing cessation maintenance. The disease model would predict that following successful cessation, agency would be reclaimed from the addiction. Significantly higher levels of personal agency were observed during narrative segments describing the cessation maintenance stage, the time after quitting than in narrative segments describing stages during which the participant was smoking. Following cessation, participants were significantly more likely to assign agency to themselves than during any other stage following the initiation of nicotine use. This pattern suggests that the research indicating high levels of self-efficacy among people quitting smoking during the termination stage can be extended to understanding patterns of personal agency assignment (Prochaska & Velicier, 1997). Post-cessation, personal agency was at its highest observed levels. It should be noted that this does not necessarily mean that agency returned to levels similar to that of non-smokers, as the current study lacked such a control. Taken together, these findings provide support for the predicted patterns of agency based on the disease model of addiction.

However, other findings were not in line with prediction. It was expected that personal agency assignment rates would be higher in narrative segments describing the time leading up to and including the initiation of smoking behavior smoking initiation (initiation pre-contemplation, contemplation, preparation, and action stages) than in segments describing active smoking (cessation pre-contemplation, contemplation, and

preparation stages). Analyses actually indicated the reverse relationship, with significantly higher levels of personal agency assignment during cessation stages than during initiation stages. This prediction, founded upon assumptions of the disease model of addiction, was not supported by observed patterns of agency assignment. Researchers have suggested that as the dominant model of addiction, the disease model influences how smokers frame their addiction (McCullough & Anderson, 2012). As enacted in typical twelve-step programs such as VONR, the model suggests a pattern of agency during the course of smoking initiation, smoking behavior, quit attempts, and finally maintenance and termination (McCullough & Anderson, 2012; Alcoholics Anonymous World Services, 1981). Given that the disease model and twelve-step programs emphasize the loss of control to addiction during the course of substance use, it was expected that lower levels of human personal agency would be observed during stages that include use of nicotine (use and addiction takes place during the cessation pre-contemplation stage through the action stage of cessation) than in those stages occurring prior to nicotine use. However, this hypothesis was not supported; in fact, the opposite pattern was observed. This may indicate that, as argued in previous research, the disease model may not be the best way of conceptualizing agency and addiction (McCullough & Anderson, 2012). It may also be that other phenomena related to smoking initiation, such as "peer pressure," may shift the focus of these narrative sections to individuals and forces other than the author.

It should also be noted that, while examples of language usage in cessation stages were consistent across all participants, narrative sections pertaining to the various stages

of smoking initiation were not universally present in the data. Due to the nature of the "speaker shares" used in the creation of the corpus, many speakers focus heavily on their experiences smoking and their ultimate cessation and maintenance, while offering only brief descriptions of their time previous to initiation. This limits the value of the reported results for hypotheses concerning assignment rates during smoking initiation as data were inconsistently available for some initiation stages, potentially skewing results. While as discussed above, support was found for expected increases in non-human agency assignment, it cannot necessarily be said that this increase is associated with drops in personal agency as would be predicted by the disease model. These limitations suggest that drawing strong conclusions from these findings should be avoided. Future research should seek to gather more complete data concerning smoking initiation and should further examine patterns of agency assignment in these stages.

Although non-human agency assignment was more prevalent in segments describing stages of smoking than those describing the time before initiation, additional inquiry into patterns of non-human agency assignment did not find support for the hypotheses. It was proposed that the non-human agency assignment rate would be higher in narrative segments describing cessation preparation and action than in segments describing cessation pre-contemplation and contemplation, however, testing found no significant differences in assignment between stages. In the transtheoretical model, seeking out help whether in the form of a twelve-step program or not, is generally associated with the cessation preparation stage and continues through the cessation action stage (Sutton, 2001; West, 2005). Pre-contemplation and contemplation stages are likely

to occur prior to involvement with influences such as twelve-step programs which emphasize lack of control and powerlessness in the face of addiction. This emphasis on a loss of power to the addiction was expected to affect agency assignments based on previous research into addiction and agency (McCullough & Anderson, 2012) and demonstrations that affect may influence linguistic agency assignment (McGlone & Pfeister, 2009). Studies have demonstrated that self-efficacy is lower during the cessation preparation and action stages than earlier stages of smoking cessation (e.g., Prochaska & Velicier, 1997). No significant differences were observed between the aforementioned groups of stages in terms of non-human agency assignment. While exposure to the disease model and the emphasis on powerlessness over addiction is most overt in the context of treatment programs, McCullough and Anderson (2012) argue that the disease model of addiction is pervasive and has an impact on how individuals view addiction even before involvement in a cessation programs. Some of the participants were also found to be members of other twelve-step programs prior to their engagement with VONR, which could have further diminished the presence of any such pattern, as this pervasive exposure might have caused nicotine users to frame their addiction in terms of lost power or agency prior to involvement with twelve-step programs. Additionally, the narratives used were recorded retroactively at various times following cessation ranging from the minimum allowed by the group of 90 days to several instances where speakers were recounting cessation that had occurred decades ago. Many researchers have suggested that people organize their lives into narratives and that narrative accounts can provide insight into those people's perceptions (Baumeister et al., 1990; Gergen, 1998),

but most research on associations between linguistic phenomena and addiction outcome variables has been conducted using diaries that were collected over the course of the participants' addiction and treatment. Differences in terms of current attitudes regarding addiction and nicotine may have affected patterns of agency assignment due to the retrospective nature of the corpus. This may have resulted in participants' current understandings of addiction, which have presumably been influenced by involvement in VONR, influencing the report of previous stages of cessation. Future inquiry should seek to replicate and expand upon findings in a longitudinal fashion, with participants who are not involved in any other addiction management programs in order to address this more directly.

The pattern of non-personal agency assignments observed was also different than expected. It was hypothesized that the non-personal human agency assignment rate would be higher in narrative segments describing cessation preparation and action stages than in segments describing cessation pre-contemplation and contemplation. The rationale for this prediction was similar to that discussed in the section above for patterns of non-human agency. Participants are generally first exposed to the twelve-step approach, the corresponding emphasis on the disease model, and the relinquishment of control during the preparation stage, with continued exposure through the action stage of cessation. Due to the emphasis traditionally placed on relinquishing control to a higher power and the emphasis on relying on other people such as a sponsor, participants in twelve-step programs were expected to demonstrate higher levels of non-personal agency language usage during the time leading up to successful cessation when compared to stages where

they were actively smoking. This consideration coupled with research on the transtheoretical model showing self-efficacy dips during the cessation action and preparation stages (Prochaska & Velicier, 1997) provided the foundation for the predicted pattern of agency assignment. However, no significant differences in assignment rate were observed between these stages. Participants in twelve-step programs are told that their higher power can be anything. The frequent use of various different ways of referring to god or a "higher power", that included traditionally human pronouns such as "he"or "she", and various classifiers such as "Lord" or "Savior", used interchangeably with words that denote typically denote non-human actors such as "fate" or "power", and a variety of other unique terms, proved problematic. The coding scheme used for this study avoided the use of contextual cues whenever possible in order to remove subjective elements of coding. While this improves replicability and reliability between coders, given the extensive focus on spirituality and a higher power in twelve-step programs, use of this coding scheme in addiction research may require additional reliance on contextual cues in order to reliably code agency assigned to god and other higher power.

A series of hypotheses describing an expected pattern of human personal agency assignment during cessation stages were proposed. With the exception of the finding that the rate of personal agency assignment was highest following nicotine cessation, comparisons of assignment rate between stages did not support the predictions. It was expected that personal agency assignment rates would be lower in narrative segments describing the cessation pre-contemplation stage than in segments describing cessation contemplation. It was also predicted that personal agency assignment rates would be

lower in narrative segments describing the cessation contemplation stage than in segments describing cessation preparation, and finally, that personal agency assignment rates would be lower in narrative segments describing the cessation action stage than in segments describing all other cessation stages. These predictions were each based in previous research that has shown that at the outset of the cessation pre-contemplation stage, reported self-efficacy is generally low and then tends to rise during each of the following two stages (contemplation and preparation) leading to active attempts to quit (DiClemente et al., 1991). Self-efficacy then tends to fall during the action stage before increasing again following cessation during the maintenance stage (Prochaska & Velicier, 1997).

In each of these cases, increases in personal agency assignment rate from stage to stage were not significant, however, as seen in the included chart of average rates of agency assignment, an overall trend of increasing rates of personal agency as the stages progress, with the exception of a dip in personal agency assignment during cessation preparation, was observed. While this is not the exact pattern suggested by research on self-efficacy, the overall pattern of increasing agency with a dip just before cessation is quite similar to that proposed. Previous research on the transtheoretical model has noted that the division between stages can be arbitrary, subjective and often requires insight into internal states (Herzog et al., 1999; Sutton, 2001; West, 2005). This may have resulted in the observed pattern if assignments to the preparation and action stages, which are closely related and difficult to delineate, were inaccurate. This may also suggest that agency assignment follows a similar, but different pattern than self-efficacy. Previous

research into linguistic agency has also had mixed results in demonstrating a link between reported perceptions of self-efficacy and effects and linguistic agency when measuring the influence of public health messages in which linguistic agency had been manipulated (Bell et al., 2013a; Bell et al., 2013b). Despite conceptual similarities, self-efficacy and linguistic agency may not be as directly linked as one might expect. Additional research examining the relationship between these two phenomena is warranted, as is longitudinal or cross sectional research that observes agency assignment in situ during the relevant stages. Previously discussed findings concerning high levels of personal agency during the maintenance stage were also partially based on the same research on patterns of reported self-efficacy. This could potentially call into question the rationale for the observed pattern of agency assignment during maintenance, despite the significant result. Coupled with the aforementioned pattern of personal agency assignment observed, however, this may suggest that while significant differences were not observed between each of the paired stages, reported self-efficacy can still provide insight into agency assignment. Additional inquiry will be necessary to determine the nature of that relationship and whether observed deviations from the expected pattern of assignment were due to inconsistent or different operationalizations of the stages of addiction, some other factor, or if the observed pattern is indicative of a more complex relationship between reported self-efficacy and linguistic agency assignment.

Several more global limitations and directions for future research also merit discussion. Numerous examples of negation of agency were observed in the corpus such as “I just couldn’t quit”. In the current coding scheme, phrases such as this are coded as

indicating human agency, however, the use of negation may indicate a different quality of agency. Similarly, “The addiction doesn’t control me anymore” would be coded as non-human agency, but seems to denote a denial of some degree of agency to the addiction. While this wouldn’t be understood to convey a similar level of agency as stating “I freed myself from the addiction,” coding these phrases in the same way as their positively stated corollaries may obscure more complex patterns of agency assignment. Future research into this area should seek to delineate between negated agency and more directly assigned agency based on grammatical features. This is closely related to another limitation to the coding scheme. While it adequately captures the quantity of various types of agency assignment, it does not delineate between agency assignments of different quality or degree. As noted in the literature review, McCullough and Anderson (2012) propose three categories of agency (claiming, problematizing, and deflection). While it likely is not possible to replicate these exact categories grammatically, the notion of agency on a continuum seems useful in differentiating statements that intuitively indicate different degrees of agency such as “I had to smoke a cigarette” and “I smoke a cigarette” which would be coded in the same way with the coding scheme in use in this study. Future research should seek to identify grammatical features that are consistently perceived as indicating different strengths of agency assignment in order to go beyond the current use of simple rates.

Previous research also identified distinctions in the use of the pronoun “you” that are largely contextual, but result in a very different meaning and understanding of agency (McCullough and Anderson, 2012; O’Conner, 2000). “You” can operate either as the

conventional pronoun that indicates an individual or a group of individuals other than the speaker, or it can operate as a generalizing term for a global group that includes the speaker. As an example, in the phrase "If you smoke, you become addicted" the word "you" can be understood as encompassing all people, including the speaker. In effect the speaker is saying that anyone in this position would likely experience the same result and is not excluding themselves from that statement. This could be interpreted as an instance of personal shared agency much like "we". In the current coding scheme instances of "you" are coded as human non-personal agency and this potential distinction is lost. Future research should seek to code these different uses of the word distinctly.

Nearly 17% of U.S. adults are current cigarette smokers according to the Center for Disease Control (2015). Smoking is the leading cause of preventable deaths worldwide and in the U.S. specifically (Centers for Disease Control, 2015) and tobacco related illnesses are linked to 480,000 deaths a year. Smokers have an average life expectancy ten years shorter than non-smokers (Danaei et al., 2009). The negative effects of cigarette addiction are enormous. The presented findings and future research in this area have applicability in assessing the validity of various models of addiction. McCullough and Anderson (2012) argued that the disease model of addiction, while dominant, may not be the best way of conceptualizing addiction and encouraging recovery, both from a treatment and a modeling standpoint and advocate for greater use of the Social Constructionist Model of addiction. Future research should explore agency assignment patterns predicted by other models of addiction to determine if they offer better fit for the observed data than the disease model. Research of this type has the

potential to provide insight into the extent to which nicotine addiction operates in the ways described by the various disparate models of addiction. A better understanding of personal agency and addiction has the potential to inform treatment programs and help mitigate the large-scale harm caused by nicotine addiction. Evaluation of differences in agency assignment between those that experience successful cessation and those who relapse may prove instructive in managing addiction and designing more successful treatment. With only 12% of smokers who quit smoking for one month reporting successful cessation after two years, improving treatment success rates is of paramount importance (Raherison et al., 2005). The current findings may also have applicability in the development of public health campaigns, given previous research indicating links between agency assignment manipulation in public health materials and behavioral intention (McGlone, Bell, Zaitchik, McGlynn, 2012; Bell, McGlone, & Dragojevic, 2013a; Bell, McGlone, & Dragojevic, 2013b). Additional research in this area should seek to develop prescriptive findings that can be used to increase the efficacy of smoking prevention and cessation efforts.

Appendix A

Common Subjective/Objective Case Pronouns

Common Subjective Pronouns

First Person: I, We
Second Person: You
Third Person: He, She, It, They, Everyone, Everything, Anything, Anyone

Common Objective Pronouns

First Person: Me, Us
Second Person: You
Third Person: Her, Him, It, Them, Everyone, Everything, Anything, Anyone

Appendix B

Singular/Plural Pronouns

Common Singular Pronouns

First Person: I, Me
Second Person: You
Third Person: She, Her, Him, He, It

Common Plural Pronouns

First Person: We, Us
Second Person: You
Third Person: They, Them

Works Cited

Ahearn, L. (2001). Language and Agency. *Annual Review of Anthropology, 30*(1), 109 137. http://dx.doi.org/10.1146/annurev.anthro.30.1.109

Alexander, B. (2008). *The globalisation of addiction*. Oxford: Oxford University Press.

Baumeister, R., Stillwell, A., & Wotman, S. (1990). Victim and perpetrator accounts of interpersonal conflict: Autobiographical narratives about anger. *Journal of Personality and Social Psychology, 59*(5), 994-1005. http://dx.doi.org/10.1037/0022-3514.59.5.994

Bell, R., McGlone, M., & Dragojevic, M. (2013a). Bacteria as bullies: Effects of linguistic agency assignment in health messages. *Journal of Health Communication, 19*(3), 340-358. http://dx.doi.org/10.1080/10810730.2013.798383

Bell, R., McGlone, M., & Dragojevic, M. (2013b). Vicious viruses and vigilant vaccines: Effects of linguistic agency assignment in health policy advocacy. *Journal of Health Communication, 19*(10), 1178-1195. http://dx.doi.org/10.1080/10810730.2013.811330

Billig, M. (2008). The language of critical discourse analysis: the case of nominalization. *Discourse & Society, 19*(6), 783-800. http://dx.doi.org/10.1177/0957926508095894

Bottorff, J., Radsma, J., Kelly, M., & Oliffe, J. (2009). Fathers' narratives of reducing and quitting smoking. *Sociology of Health & Illness, 31*(2), 185-200. http://dx.doi.org/10.1111/j.1467-9566.2008.01126.x

Burr, V. (2003). *Social constructionism*. London: Routledge.

CDC - Fact Sheet - Fast Facts - Smoking & Tobacco Use. (2015). *Smoking and Tobacco Use*. Retrieved 20 May 2015, from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/

CDC - Fact Sheet - Fast Facts - Smoking & Tobacco Use. (2016). *Smoking and Tobacco Use*. Retrieved 20 April 2016, from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/

Centers for Disease Control and Prevention (2011). Quitting smoking among adults-United States, 2001-2010. *MMWR. Morbidity and mortality weekly report*, *60*(44), 1513.

Chomsky, N., (1965) *Aspects of the theory of syntax*. Cambridge, MA.: MIT Press.

Chomsky, N. (1970). Remarks on Nominalization. In R. Jacobs & P. Rosenbaum, *Readings in English transformational grammar* (1st ed., pp. 184-204). Waltham, Mass: Ginn.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, N.J.: L. Erlbaum Associates.

Cosgrave, J. F. (2010). Embedded addiction: The social production of gambling. *Canadian Journal of Sociology/Cahiers canadiens de sociologie*, *35*(1), 113.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*,*16*(3), 297-334. http://dx.doi.org/10.1007/bf02310555

Crystal, D. (1995). *The Cambridge encyclopedia of the English language*. Cambridge: Cambridge University Press.

Danaei, G., Ding, E., Mozaffarian, D., Taylor, B., Rehm, J., Murray, C., & Ezzati, M.

(2009). The preventable causes of death in the United States: Comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *Plos Med*, *6*(4), e1000058. http://dx.doi.org/10.1371/journal.pmed.1000058

DiClemente, C., Prochaska, J., Fairhurst, S., Velicer, W., Velasquez, M., & Rossi, J. (1991). The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting And Clinical Psychology*, *59*(2), 295-304. http://dx.doi.org/10.1037/0022-006x.59.2.295

Dowty, D. (1991). Thematic proto-roles and argument selection. *Language*, *67*(3), 547-619. http://dx.doi.org/10.1353/lan.1991.0021

Dragojevic, M., Bell, R., & McGlone, M. (2013). Giving radon gas life through language: Effects of linguistic agency assignment in health messages about inanimate threats. *Journal of Language and Social Psycholo*gy, *33*(1), 89-98. http://dx.doi.org/10.1177/0261927x13495738

Fausey, C. & Boroditsky, L. (2010). Subtle linguistic cues influence perceived blame and financial liability. *Psychonomic Bulletin & Review*, *17*(5), 644-650. http://dx.doi.org/10.3758/pbr.17.5.644

Fausey, C. M., Long, B. L., Inamori, A., & Boroditsky, L. (2010). Constructing agency: the role of language. *Frontiers in Cultural Psychology*. doi:10.3389/fpsyg.2010.00162

Frazer, A. & Miller, M. (2008). Double standards in sentence structure: Passive voice in

narratives describing domestic violence. *Journal of Language and Social Psychology, 28*(1), 62-71. http://dx.doi.org/10.1177/0261927x08325883

Gergen, K. J. (1998). From control to coconstruction: New narratives for the social sciences. *Psychological Inquiry, 9*(2), 101-103. http://dx.doi.org/10.1207/s15327965pli0902_4

Gergen, K. (2001). Social construction in context. London: SAGE.

Helvig, T., Sobell, L., Sobell, M., & Simco, E. (2006). Smokers' narrative accounts of quit attempts: Aids and impediments to success. *Psychology of Addictive Behaviors, 20*(2), 219-224. http://dx.doi.org/10.1037/0893-164x.20.2.219

Herzog, T., Abrams, D., Emmons, K., Linnan, L., & Shadel, W. (1999). Do processes of change predict smoking stage movements? A prospective analysis of the transtheoretical model. *Health Psychology,18*(4), 369-375. http://dx.doi.org/10.1037/0278-6133.18.4.369

Hiscock, R., Judge, K., & Bauld, L. (2010). Social inequalities in quitting smoking: What factors mediate the relationship between socioeconomic position and smoking cessation?. *Journal of Public Health*. https://doi.org/10.1093/pubmed/fdq097

Hymowitz, N., Cummings, K., Hyland, A., Lynn, W., Pechacek, T., & Hartwell, T. (1997). Predictors of smoking cessation in a cohort of adult smokers followed for five years. *Tobacco Control,6*(Supplement 2), S57-S62. http://dx.doi.org/10.1136/tc.6.suppl_2.s57

Koob, G. & Le Moal, M. (2008). Addiction and the brain antireward system. *Annual*

Review of Psychology, 59(1), 29-53. http://dx.doi.org/10.1146/annurev.psych.59.103006.093548

Kroeger, P. (2005). Analyzing grammar: An introduction. Cambridge University Press.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 159-174. doi: 10.2307/2529310

McCullough, L. & Anderson, M. (2012). Agency lost and recovered: A social constructionist approach to smoking addiction and recovery. *Addiction Research & Theory, 21*(3), 247-257. http://dx.doi.org/10.3109/16066359.2012.709561

McGlone, M. & Pfiester, R. (2009). Does time fly when you're having fun, or do you?: Affect, agency, and embodiment in temporal communication. *Journal of Language and Social Psychology, 28*(1), 3-31. http://dx.doi.org/10.1177/0261927x08325744

McGlone, M., Bell, R., Zaitchik, S., & McGlynn III, J. (2013). Don't let the flu catch you: Agency assignment in printed educational materials about the H1N1 influenza virus. *Journal of Health Communication,18*(6), 740-756. http://dx.doi.org/10.1080/10810730.2012.727950

Ockene, J., Mermelstein, R., Bonollo, D., Emmons, K., Perkins, K., Voorhees, C., & Hollis, J. (2000). Relapse and maintenance issues for smoking cessation. *Health Psychology, 19*(1), 17-31. http://dx.doi.org/10.1037/0278-6133.19.suppl1.17

O'Connor, P. (2000). Speaking of crime. Lincoln: University of Nebraska Press.

Peele, S. (1988). A moral vision of addiction: How people's values determine whether

they become and remain addicted. In S. Peele, *Visions of addiction: Major contemporary perspectives on addiction and alcoholism* (1st ed., pp. 201-233). Lexington, MA: Lexington Books.

Prochaska, J. O., & DiClemente, C. C. (1986). Toward a comprehensive model of change. In *Treating addictive behaviors* (pp. 3-27). Springer US.

Prochaska, J. & Velicer, W. (1997). The Transtheoretical model of health behavior change. *American Journal Of Health Promotion, 12*(1), 38-48. http://dx.doi.org/10.4278/0890-1171-12.1.38

Raherison, C., Marjary, A., Valpromy, B., Prevot, S., Fossoux, H., & Taytard, A. (2005). Evaluation of smoking cessation success in adults. *Respiratory Medicine, 99*(10), 1303-1310. http://dx.doi.org/10.1016/j.rmed.2004.12.002

Rudes, J. & Guterman, J. (2007). The value of social constructionism for the counseling profession: A reply to Hansen. *Journal of Counseling & Development, 85*(4), 387-392. http://dx.doi.org/10.1002/j.1556-6678.2007.tb00606.x

Stephenson, G. M., Laszlo, J., Ehmann, B., Lefever, R. M., & Lefever, R. (1997). Diaries of significant events: socio-linguistic correlates of therapeutic outcomes in patients with addiction problems. *Journal of Community & Applied Social Psychology, 7*(5), 389-411.

Stephenson, G. M., & Zygouris, N. (2007). Effects of self reflection on engagement in a 12-step addiction treatment programme: A linguistic analysis of diary entries. *Addictive behaviors, 32*(2), 416-424.

Sutton, S. (2001). Back to the drawing board? A review of applications of the

transtheoretical model to substance use. *Addiction, 96*(1), 175-186. http://dx.doi.org/10.1046/j.1360-0443.2001.96117513.x

Twelve steps and twelve traditions: Alcoholics Anonymous World Services. (1981). New York: Alcoholics Anonymous World Services.

Vangeli, E., Stapleton, J., Smit, E., Borland, R., & West, R. (2011). Predictors of attempts to stop smoking and their success in adult general population samples: a systematic review. *Addiction, 106*(12), 2110-2121. http://dx.doi.org/10.1111/j.1360-0443.2011.03565.x

Voices of Nicotine Recovery. (2016). Retrieved May 03, 2016, from http://www.voicesofnicotinerecovery.com/speaker-shares

West, R. (2005). Time for a change: putting the Transtheoretical (Stages of Change) Model to rest. *Addiction, 100*(8), 1036-1039. http://dx.doi.org/10.1111/j.1360-0443.2005.01139.x

Zildjaly, N. (2009). Agency as an interactive achievement. *Language & Society., 38*(02), 177. http://dx.doi.org/10.1017/s0047404509090320