Institut for Psykologi

Tilt: A Theoretical Framework

Tilt: En Teoretisk Ramme

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Abstract

Dette speciale er et teoretisk speciale, der drager/udvinder information fra litteraturen gennem et litterært review af relevante artikler. Målet med specialet er at nuancere beskrivelsen af tilt, på et teoretisk plan, for at kunne beskrive en intervention der kunne implementeres for at modvirke implikationerne af tilt processen.

Gennem specialet beskrives tilt som en emotionel proces, der gennemleves i tre faser; Mødet med en tilt situation, håndtering af denne, og den emotionelle reaktion baseret på håndteringen. Litteraturen der anvendes gennem vores review fremhæver gennemgribende tematikker, bl.a. emotioner, der beskrives uden teoretiske definitioner. Derfor anvendes appraisal theory, five factor model, performance psykologi, samt meta kognitive interventions beskrivelser til at opnå målet om at nuancere den teoretiske beskrivelse af tilt.

Ved at gøre dette, opnår vi et stærkere teoretisk grundlag til at foreslå og beskrive en relevant og effektiv intervention. Målet med interventionen er at håndtere de negative emotioner og tankemønstre der dannes gennem tilt processen. Vi anvender derfor en intervention ved navn: Think Aloud, hvis formål er at optage og præsentere individer med deres emotionelle og kognitive processer. Ved at gøre dette, har individet mulighed for at danne sig et indtryk af hvordan disse processer optimeres med henblik på optimeret ydeevne.

Specialet opnår en teoretisk beskrivelse af tilt, der danner rammerne for at kunne implementere denne forståelse af den emotionelle proces der gennemleves i tilt. Disse rammer anses som værende implementerbare i andre henseender end den poker kontekst der beskrives i litteraturen, på baggrund af den valgte teori. Dette styrker dermed også implementeringen af Think Aloud i disse henseender.

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We would also like to give a special thanks to the University of Southern Denmark for presenting the opportunity to write a dissertation regarding tilt, which is outside the current body of research literature available.

Also a special thanks to PhD Jonas Sveistrup Søgaard, with whom we discussed our topic, methodological approach and assignment structure. The insight into important aspects of these was a great help during the onset of our dissertation.

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1. Introduction

The current dissertation aims to describe the phenomenon tilt. The context in which we, the authors, meet this phenomenon is within the world of Esports. It is within this context that Himmelstein, Liu, & Shapiro (2017) describes tilt, as an inability to cope with harassment and/or other forms of negative behavior in video games. Based on this, we originally aimed to research the phenomenon in the context of esport. However, we were faced with the reality that there has not yet been conducted any research into tilt, apart from Himmelstein, Liu, & Shapiro (2017). Therefore, we decided to change our approach. Tilt as a phenomenon is described in a number of different contexts, but originally stems from poker, as an important aspect of learning and controlling your gameplay and emotions during play (Browne, 1989). Tilt is described as a loss of control emotionally, or cognitively, resulting in chaotic and unoptimized play (Browne, 1989). The importance of tilt, to the average poker player was shown through a number of different studies, which showed the experience of tilt, to be consistent among players (Browne, 1989; Palomäki, Laakasuo., & Salmela, 2013; Barrault., Untas, & Varescon, 2014; Moreau., Chabrol, & Chauchard, 2016). These studies are of a qualitative nature, and show, through interviews, subjective insight into the experience of tilt.

Our interest in the phenomenon is based on this relationship, between the emotional control of the player, and the problematic behaviors related to the game, in the case of poker problematic gambling (Browne, 1989). The relationship between tilt and problematic gambling, is hypothetical, but the phenomenon is consistently described and understood by poker players and researchers, in a number of different studies (Browne, 1989; Palomäki, Laakasuo, & Salmela, 2012a, 2012b, 2013; Barrault, Untas, & Varescon, 2014; Moreau, Chabrol, & Chauchard, 2016; Moreau, Delieuvin, Charbrol, & Chauchard, 2017; Moreau, Chauchard, Sévigny, & Giroux, 2020; Moreau, Sévigny, Giroux, & Chauchard, 2020). Some of these articles directly discuss and support the hypothetical link to problematic gambling behavior. The issue of tilt is therefore not if the experience is accurate, or whether or not the

players experience it. The issue we find pressing is; At a theoretical level, what exactly is tilt? The problem with the phenomenon is not only that there is a limited amount of research, but that the research itself is limited in its theoretical description of tilt.

The theoretical explanation of tilt is underdeveloped relative to the amount of intervention-related work that exists in the world of poker. Browne (1989) already describes how, in 1989, the discussion of tilt as an issue for poker players was consistently brought up in poker magazines. This reality has only increased, as online poker, and access to the wealth of knowledge on the internet, has increased. However, there are not any interventions that are supported by any theory, or any study currently conducted. There is also a lack of theoretical frameworks, which could be used to support a possible intervention, and therefore guide these discussions. All of this is reasonable, considering there are not any theories attached to the phenomenon. The argument that we would like to make is that there are plenty of theoretical approaches, which can explore and explain tilt as a phenomenon. However, none of these theoretical frameworks have currently been applied, arguably due to the limited view of tilt as a precursor to problematic gambling behavior instead of tilt as an emotional process, which can and should be intervened upon, if a player wants to improve at their hobby, in this case online poker.

1.1 Understanding tilt

Given that Browne has laid the groundwork for how tilt is understood as a concept, it is important to understand and apply his understanding of tilt. Browne describes tilt as a loss of emotion control, which has a negative impact on the individual. Furthermore, he states that all gamblers will experience a tilt process at some point during their playing career. However, as Browne says, "*What distinguishes problem gamblers from other players is the frequency and duration of tilt*". Browne considers tilt as a central aspect of the problem gambler.

Browne (1989) says, "*Being on tilt means that a gambler's play has changed for the worst because he or she has lost control*". This quote shows that tilt is an observable change in

play, based on how much of their emotional control has been lost due to tilt. Looking at it this way, strengthens the argument made by Moreau, Delieuvin, Chabrol and Chauchard (2017), regarding tilt being a process. It can be understood that as tilt progresses within the individual experiencing it, the loss of control becomes more prevalent, thereby inducing a negative impact on the individuals ability to perform to the best of their ability.

Browne (1989) states that "*Forgetting one's losses, like gambling, is a learnt skill or social practice. In this paper, I shall advance the concept, tilt that might give some insight into this question*". This quote shows why Browne felt that expanding on the concept of tilt was of paramount importance. Browne felt that shedding light on tilt could counteract the psychological issues that problem gamblers face, given that tilt plays a role in upholding and enforcing some of the issues that they face.

As described by Browne tilt is an emotional process, which results in an experience of emotional control loss. Palomäki, Laakasuo, Salmela (2013) researched this phenomenon by exploring the narratives surrounding tilt, that poker players generated when asked to write a story about their own experiences with tilt. What they found, were descriptions similar to this:

"*Finally, after I had lost enough, I realized I needed to quit, and after having closed the tables I was overcome by despair and depression. [...] I felt great sadness, because in just one day I had flushed down the toilet my winnings from the past 2 months.*"

This is a quote from a 23 year old male, describing a state of mind, that you could easily infer as problematic, should he not be able to cope. This description is not unique, similar descriptions are found throughout the written narratives that Palomäki, Laakasuo, Salmela (2013) found, when asking for tilt experiences. Here is another quote from a 22 year old poker player:

"*After a few hours and a few cigarettes I calmed down. But after that, I felt very disappointed in myself, and also disappointed in my complete failure to control my tilt*"

Not only do we again see a negative emotional state, but we are also getting a description of a pattern of behavior that can negatively influence his health. Tilt is consistent throughout the

recreational poker playing world, and these types of experiences are consistently described by the players that play it.

1.2 Description of the study goals

Our goal with the dissertation is to gain theoretical knowledge of the phenomenon, advancing the probability of describing a relevant and effective intervention. Reviewing the current literature to explore the characteristics of tilt, in order to nuance the definition of tilt at a theoretical level, allowing us to describe a relevant and effective intervention approach. We aim to derive characteristics of tilt from relevant literature through a literature review and a content analysis. This will allow for a deeper understanding of which psychological theories can be applied to better describe tilt at a theoretical level.

Throughout the majority of the literature, tilt has primarily been looked at in correlation with problematic gambling behavior. The literature also presents tilt as an emotional process that is not unique to the context of poker. Due to the emphasis on the correlation between tilt and problematic gambling behavior, tilt has not been looked at from other theoretical perspectives, creating a gap of knowledge in the understanding of tilt. We argue that applying psychological theory could present an opportunity to apply the understanding of tilt to scenarios where a similar emotional process is experienced, but the term tilt is not applied. Furthermore, we aim to apply the theoretically nuanced description of tilt to support the implementation of intervention approaches on similar emotional processes.

2. Research Question

Based on the study goals mentioned above, our research question is:

> *When deriving characterizations of tilt from the current body of evidence, which*
> *psychological theory/theories describe a suitable intervention approach?*

3. Readers guide/ structure of the dissertation

The current paper is a theoretical master's dissertation structured around a systematic literature search. The research question is answered by a literature review, based on systematic searches in databases which are associated with the danish universities. The dissertation itself is structured around two main parts, the literature review, and the discussion, with an introduction before, and a following conclusion.

Through the introduction, the reader is presented with the research question and the goals of the study. On top of that, the reader will be provided with a basic understanding of the topic at hand, in order to better grasp the meaning of the ensuing parts of the dissertation.

Part one has a more detailed description of tilt, where the reader is provided with a comprehensive understanding of the tilt process. This is done to provide a better understanding of the topic prior to the review, as well as inferring keywords for the purpose of coding during our analysis. The literature review is isolated in Part one of the dissertation in order to highlight the structure and value that is derived from the review and analysis of the relevant literature. The analysis in Part one derives characteristics of tilt from the relevant literature and discusses the meaning of these. This means that the reader is presented with the descriptors of tilt, and will be presented with the theoretical perspectives that can be utilized to theoretically nuance the understanding of tilt.

In Part two the theoretical perspectives chosen are expounded upon and applied to the understanding of tilt. This means that in Part two, the reader will read argumentation for how the tilt process can be understood based on the theories at hand. The intervention approach will also be discussed in this part of the dissertation.

Finally, the reader will be presented with the conclusion, where the points of the dissertation will be summarized and concluded. Beyond that, the perspectivation will describe how our findings can be utilized in future research.

4. Philosophy of Science

The literature at hand primarily uses a subjectivistic description of the phenomenon tilt. The literature utilizes individual experiences and descriptions of tilt to determine the underlying factors implicating the emotional process and the correlation to problematic gambling behavior.

Therefore, the current dissertation utilizes a subjectivistic approach to knowledge (Merlo, 2016). This means that knowledge of the topic that we are researching is attained through subjective understandings of personal experiences with tilt. Subjectivism describes that even when a phenomenon is experienced and perceived differently by different individuals, these experiences are a reality for these individuals (Merlo, 2016). This can be the case, even if the interpretations of the phenomenon differ (Merlo, 2016). This means that there is no description of an objective truth (Merlo, 2016). However, due to high intersubjectivity, we can observe that the description of tilt is consistent throughout the existing literature, allowing the assumption that it is an existing phenomenon (Petersen, & Muckadell, 2014).

Part 1: Reviewing literature on tilt

The following chapters will look to complete a literature review of the relevant literature regarding tilt. In order for this to be done, we will first present the topic; tilt. This will be done off the back of Browne (1989) and presented thoroughly as a theoretical construct. Hereafter, will we use keywords derived from this understanding of tilt, in order to find descriptors that show that the topics of Browne are echoed throughout the literature. These keywords and descriptors highlight areas in the literature where theory can be applied in order to nuance the understanding of tilt.

5. Presentation of Tilt

5.1 What is tilt?

Browne (1989) is the cornerstone of all the literature that has been found for this topic, making it vital that we choose this as our base understanding of tilt as a phenomenon. In his article, Browne (1989) states that the term tilt is " … *regularly used and explained in the weekly magazine, Poker player…*". This goes to show that the term is well known, by individuals who play poker or are interested in the gamesmanship aspect of poker. However, in the same article, Browne also states:

"Although some problem gamblers and most compulsive gamblers (members of G.A.) did

not use this term, they, nonetheless, described the same process."

This point is an interesting one, that indicates that while tilt is a known phenomenon for individuals who are interested in gamesmanship, it is less known for individuals who have gambling issues. The issue with this is that tilt still has a detrimental effect on these individuals' ability to perform and, in the long run, has an effect on their emotional and cognitive state.

Browne (1989) describes tilt as a result of an emotional process consisting of three phases:

"Tilt can be broken down into three phases: first, encountering a tilt-inducing situation;

second, an internal emotion struggle to retain control; and third, the deterioration of the

player's game if he or she does not retain control."

These phases describe how an individual can experience a situation that does not create a perceived positive outcome, and thereby create a snowball effect into the emotional reaction of tilt that has a negative impact on the individuals' abilities to perform.

5.2 Tilt as a term

Browne (1989) describes three factors that are necessary to perform optimally in poker. These factors are: Good gamesmanship, Good money management and Good emotional management. These three factors play a part in the success of an individual's poker career. Browne describes that it is possible to *"Beat the game"* and win money over time, and the share of players that do manage this is around 5%. This means that around 5% of poker players are good enough to, over time, win money from their gambling. Meanwhile 30-50% of players manage to break even or lose small amounts of money over an extended period. This reflects how gamesmanship can help an individual in poker. However, there are learning curves to becoming a skilled poker player. This is where the other factors play a major role in avoiding a tilt and/or financial crisis through gambling.

Being good at managing your money and emotions means that it is possible for individuals with bad playing strategies to delay a gambling related crisis (Browne, 1989). However, if the individual does not learn from their mistakes, and thereby not improve their playing strategies, they will accumulate a loss over time.

It is in this understanding of emotional management that tilt plays its role. Browne (1989) states that forgetting one's losses is a learned skill that requires the individual to do so called emotional work. This means that the individual is required to work on handling their emotions in order to keep their performances streamlined and consistent. Browne argues that tilt sheds some additional light on the aspect of forgetting one's losses and/or mistakes.

Frequent poker players described tilt as what happened to them in situations where they, or other players around them, lost a lot of money or lost control (Browne, 1989). In Browne's article we see an example of how tilt is also used as a description of an individual's gamesmanship, where they *"go on tilt too often"*. This shows that tilt's influence hinders optimal performance and can, in the context of gambling, cause a lasting monetary crisis. This would imply that tilt is a deviation from a norm, which in the case of poker would reference back to gamesmanship and emotional state.

With tilt being the potential end product of a tilt process, it is relevant to look at what might cause this specific reaction. The first phase, as Browne describes it, is where the individual encounters a situation that has the potential of causing tilt in the individual. This means that there are factors that risk interfering with the individual's expectations.

The second phase describes the process of attempting to cope with the negative emotions caused by the situation that instigated the tilt process within the individual. In this phase, the individual aims to cope with A) The situation presented in the first phase and/or B) The negative emotions that arose as a result of the aforementioned situation. Should the emotional coping fail, the individual has a risk of entering the third phase.

The third phase is initiated by a dissociative stage. It is in this stage that the individual experiences a loss of control of their emotions, potentially leading to tilt which affects their decision making and ability to perform.

5.2.1 Keywords

We derived our keywords on the process of tilting from Browne (1989). This is due to the article's role as a cornerstone piece for the ensuing literature. We utilized Browne's (1989) description of tilt due to it being echoed throughout the literature that we based our analysis on. The keywords, and their contextual definitions, that were derived from Browne's description of tilt are as follows:

Keywords:

- **Emotion work:** Browne (1989) describes emotion work as an essential skill, utilized by consistent winners. It is described as a process that allows individuals to manage an emotion.

- **Loss of control:** Browne (1989) describes loss of control as a central factor to problematic, compulsive or pathological gambling. It is described as an underdeveloped area of research that has wide implications on individuals that gamble.

- **Dissociation:** In Browne (1989) dissociation is described as a state in which an individual feels disconnected from themselves and their emotions. This leads to a discrepancy between the situation at hand and the perceived situation.

- **Deviation:** Browne (1989) states that tilt is a deviation from a norm. An individual's gamesmanship and emotional state are mentioned as the baseline norms. Deviating from these may induce or may be a sign of a tilt process.

The context of the situation, playing poker, and the players' behavior i.e., gambling behavior is consistent throughout our review literature, and was therefore deemed unnecessary to include as a keyword for the purpose of describing the tilt process.

6. Literary Review

In the following segments, the methodological approach applied throughout the dissertation will be elaborated. The segments will describe the structured design applied throughout the analysis in the dissertation. The current dissertation will follow the PRISMA guideline (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009) in order to conduct a literature review, in order to nuance the understanding of tilt at a theoretical level.

Following PRISMA requires the authors of reviews to state which protocol has been applied to the literary review, if any. The methodological approach in the current dissertation had no previously released protocol to follow. Therefore, the authors of this review applied a structured approach based on the PRISMA system.

We applied the structure from a strength of evidence (DFID, 2014; EFSA Scientific Committee, 2017) approach, to get a solid strategy, for understanding the strengths and weaknesses of the body of evidence we will be reviewing. Due to the lack of research on this particular topic, our main eligibility criterion was: *Research on tilt, in the context of online poker*. Narrowing our searches with this criterion, allows us to construct a consistent homogeneous body of evidence to review. By constructing this homogenous body of evidence, we simultaneously generate a consistent context for our analysis, thereby creating

a better foundation to assess the strength of the evidence (DFID, 2014; EFSA Scientific Committee, 2017) in our synthesis.

6.1 Search description

The following segment will provide the reader with a summary of our search description. The full description can be found in the appendix (18.1). This dissertation sets out to theoretically nuance the understanding of tilt, in order to describe an intervention approach that could be relevant and effective against the implications of tilt. We found articles, within the context of poker, that describe tilt as a phenomenon and the implications it has within the game. We used search words derived from the cornerstone article (Browne, 1989) on tilt to gather relevant previous literature that allowed us to conduct a literature review, in which we summarize the knowledge on tilt that has been previously described. The searches we made were as following:

- Tilt, Poker
- Tilt, Poker, Emotion
- Poker, Dissociation
- Poker, Emotional Control

The searches were conducted on two different search engines, Pubmed (28.10.20), a database centered around life science, and PsycINFO (29.10.20), a database for the social sciences. Our searches provided us with 44 articles. An additional two articles were found through chain searching, done from the articles we found during the database searches.

6.2 Screening process

The following segment will provide the reader with a summary of our screening process. The full description can be found in the appendix (18.2). We will describe how we found the articles that we deemed relevant. We will also clarify the criteria for both inclusion and

exclusion. We will follow the guidelines of screening processes as portrayed by PRISMA (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).

Prior to our screening process, we aimed to remove duplicates as well as an article written in French. This meant that we went from having 46 articles, to having 26. Next, our screening process began. In the first step of our screening process we excluded 9 articles due to having a different context than the dissertation's topic. This left us with 17 articles. After this process, we aimed to narrow down the articles even further. In the second step we excluded further 9 articles due to not describing the relevant aspects of tilt. In the final step of our screening process, we looked at the methodological approaches in the 8 articles that were deemed relevant. Doing so meant that we removed 4 articles, 3 of which applied a qualitative method, and a single literature review on tilt.

This left us with a body of evidence consisting of 5 articles that were deemed relevant to our research question, based on their topic, the context of their research (Palomäki, Salmela, Laakasuo, 2012a, 2012b; Moreau, Delieuvin, Chabrol, & Chauchard, 2017; Moreau, Chauchard, Sévigny, Giroux, 2020; Moreau, Sévigny, Giroux, Chauchard, 2020). Furthermore, we have assembled a body of evidence which is within the acceptable criteria for the use of the strength of evidence approach, based on the methodological research approach of the articles (DFID, 2014; EFSA Scientific Committee, 2017). Below we have listed our exclusion and inclusion criteria and a flowchart of the screening process:

Exclusion Criteria

Non english or danish literature

Duplicates

Not related to online poker

Not related to tilt as phenomenon in poker

Inclusion Criteria

Research in context of online poker

Written in english or danish

Researching tilt specifically

Researching tilt quantitatively

Figure 1: Flowchart of the screening process
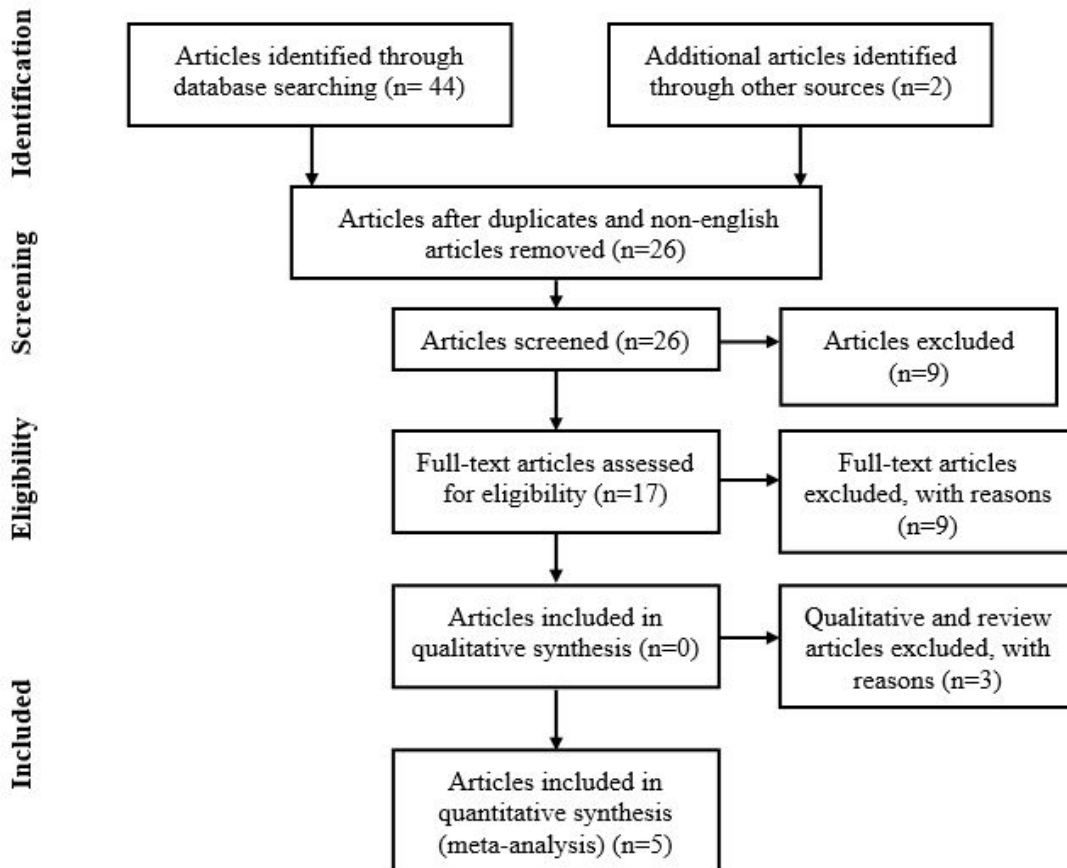
6.3 Body of evidence

The following segment will provide the reader with a summary of our body of evidence. The full description can be found in the appendix (18.3). This segment will address factors that partake in the determination of the strength of an article. There are three factors that are best applied to the body of evidence rather than the lines of evidence. These factors are; Size, Context and Consistency.

The size of the body of evidence is small, with five articles constructing the entirety of the body. Despite the body of evidence in the current dissertation being small, it is possible to

create a strong and valid nuancing of tilt (DFID, 2014). An important factor impacting the size of the body of evidence being small is the lack of relevant articles discussing the topic.

The context of the body of evidence is very specific. We found articles revolving around the topic of tilt within poker, and restricted the context further to online poker specifically. This means that we are examining an emotional process in a specific context, with a player base that has unique characteristics (Moreau, Sévigny, Giroux, Chauchard, 2020).

The body of evidence is consistent in their utilization of an online survey to gather their information. This means that all the articles are a primary research type (DFID, 2014). They apply an observational design (DFID, 2014), which can limit the strength of the research, due to a lack of environmental control. Beyond that, the design has a limited control of the participants and lacking the possibility of control groups.

7. Synthesis approach

Due to the goals of the current dissertation, we decided to utilize a narrative synthesis (Popay, et al., 2006) as our approach. The aim of using a narrative synthesis is to simplify the transition of translation of results into characteristics, which can be used to apply theory. Beyond that, the narrative synthesis finds holes in the theoretical understanding presented in the literature. This allows us to find relevant theoretical perspectives to apply to the understanding of tilt.

Our goal is to be able to suggest an intervention, as well as developing a framework, allowing future researchers to compare tilt in poker to the description of tilt in other contexts, e.g. tilt in esports. These goals are suggestions for future policy regarding interventions and possible future research areas, which the narrative synthesis lets us achieve (Popay, et al., 2006; Mays, Pope, & Popay, 2005; Booth, Sutton, & Papaioannou, 2016). Using a narrative approach also allows us to move from review results to theory discussion, as we do not have to translate statistical results into characteristics. On top of this, completing a statistical meta-analysis, in relation to the goal of the current dissertation, is made difficult due to the

differing focuses and contexts of the studies. We therefore decided to take advantage of the narrative synthesis as described by Popay, et al. (2006).

Our synthesis will be framed by two major parts, the synthesis uncovering the characteristics of the individual studies and finalized by a strength of evidence assessment to appraise the robustness of the synthesis.

7.1 Methodical approach to the narrative synthesis

The following segment will provide the reader with a description of our methodical approach to the narrative synthesis of the individual studies. Through the narrative synthesis, we will describe the individual studies in text, as well as having a tabular overview (Popay, et al., 2006). The purpose of the textual description is to, first of all, begin the construction of the narrative, which will form the basis for the following discussion. Secondly it is a way to describe each study in regards to its goals, variables and measurements.

To these textual descriptions, we will add a content analysis (Krippendorff, 2013). The content analysis is a coding of the individual studies, which is meant as a tool to find the characteristics of tilt, which each study brings forth. We chose content analysis, because it lets us code the entire article, in a structured and transparent manner.

The process of our content analysis is based upon a word frequency-count, which is guided by keywords that are derived from the description of tilt from Browne (1989). The goal of this synthesis is to gather descriptions that characterize tilt, throughout the individual research articles, so that we can compare them in the subsequent analysis. This is done to create a more nuanced description of tilt, than the articles achieve individually. The content analysis is therefore a measure which tries to gather information about the descriptions of tilt, which is not the explicit focus of the research article.

While we use content analysis to gather the information from across the body of evidence in our review, we will be using the results from the research articles, as another moderator, in the final analysis.

7.2 Methodical approach to content analysis

The following segment will provide the reader with a summary of our methodical approach to the content analysis of the individual studies. The full description can be found in the appendix (18.4). We approached our content analysis based on the ideals of Krippendorff (2013). By following these ideals, we addressed six specific questions (See appendix 18.4).

After answering the questions, we decided upon using an *a priori* coding, as described by Weber (1990). Using a coding system based off of Browne (1989), we were able to derive keywords that could create a framework for our content analysis. These keywords are, as described in the current dissertation (see chapter 5.3.1): Emotion work, Loss of control, Dissociation, Deviation.

We used the program NVivo 12, to analyse each article, by running a word frequency count on the individual articles. The results of this frequency count were then compared to the keywords from our a priori coding, based on our data definition (Krippendorff, 2013). This was used to determine which words were relevant in the characterization of tilt, these are our descriptors.

7.3 Strength of evidence

When describing the strength of evidence within an article, there are several factors that need to be considered. The current dissertation applies a tool that considers the following factors, when addressing the strength of the included articles: Conceptual framing, Transparency, Appropriateness, Cultural sensitivity, Validity, Reliability, and Cogency (DFID, 2014). The first four factors (Conceptual framing, Transparency, Appropriateness, Cultural sensitivity) consider the article's methodology and design, aiming to address potential deficiencies with these aspects. The two following factors (Validity, Reliability) consider the article's measurements and how valid and reproducible the study within the article is. The

final factor (Cogency) considers the article's lucidity, addressing how clear, convincing and trustworthy the article is.

Quality overview from DFID (2014).

Study quality	Definition
High	Comprehensively addresses multiple principles of quality.
Moderate	Some deficiencies in attention to principles of quality.
Low	Major deficiencies in attention to principles of quality.

The body of evidence that has been reviewed in the current dissertation has been categorized into two lines of evidence within the body of evidence (EFSA Scientific Committee, 2017). The lines of evidence will be summarized separately due to the groups of researchers and difference in population in the studies. After the two partial conclusions, we will compile the findings of the two groups and their respective articles together, broadening and nuancing the understanding of tilt, based on the literature at hand.

8. Literary analysis

The following segments will differentiate the two lines of evidence, as to better describe the strengths and weaknesses of the separate lines. Each article within the two lines of evidence will be looked at individually, and then combined to elaborate on the impact they have on the overall line of evidence.

8.1 Characterization of the first evidence line

The first line of evidence we will look at is the research group of Palomäki, Laakasuo and Salmela. They have written two articles that were deemed relevant to be reviewed in the current dissertation. The first of these articles will be their first article from 2012 (Palomäki, Laakasuo, & Salmela, 2012a). This will be followed up by an article that was published in the same year (Palomäki, Laakasuo, & Salmela, 2012b).

8.1.1 Palomäki, Laakasuo, & Salmela (2012a)

The first article in this line of evidence is written by Palomäki, Laakasuo, & Salmela (2012a). This is an online correlational study that utilizes a survey in order to gather its data. The article has a test population of 354 individuals from Finland, where 331 are male and 23 are female. The age range of the participants ranged from 17 to 62, where 125 of them had a university degree, leaving 229 that did not. The aim of the article was to address the topic of poker experience and the role it plays in cognitive tendencies in a high pressure environment.

The article applied 4 measurements in order to gather the information needed to answer the hypothesis. The 4 measurements used to gather this data were as following:

- Poker playing Experience Scale (PES)
- Self-rumination and self-reflection scales developed by Fenigstein, Scheier, & Buss (1975)
- Decision making scenarios
- Measurement for the influence of luck

Using these tools, Palomäki, Laakasuo, & Salmela were able to gather information about the players' experience in poker, and compare and analyze their tendencies based on their experience. In a study like this, there are variables that need to be addressed. The variables in this study were as follows:

Independent variables

- Population
- Experience
- Self-rumination vs Self-reflection

Dependent variables

- Decision making
- Conceptualization of luck

Frequency Count

Our frequency count showed the following result, based on our keywords, we found that *Emotions* (counted 41 times, as 9th most used word), *Rumination* (counted 32 times, as 14th most used word), *Reflection* (counted 29 times, as the 16th most used word) and *Losses* (counted 15 times, as the 48th most used word), were the most relevant descriptors to our keywords. The raw data can be found in appendix (18.5)

8.1.1.1 Content analysis

The four descriptors that were found in this article, were inferred based upon the keywords, emotion work, loss of control, and deviation. That is the descriptors *Emotions, Rumination* and *Reflection,* were considered emotional categories, as the article referred to self-rumination and self-reflection, as a negative, and positive consideration of one's game, which would create negative or positive emotions, derived through the consideration. The final descriptor, *Losses,* were inferred based on the keywords deviation, and loss of control. This was due to *Losses,* being related to a deviation from the expected or desired result of winning. This was also considered a category of loss of control, both due to the semantic link, but also due to Browne's (1989) description of losses being a risk for losing control.

Next, we will be using the descriptors to analyze the results of this article. The article describes two understandings of how *emotions* play a part in poker experience; Poker playing experience is associated with an ability to regulate emotions, or poker playing experience reduces the intensity of negative emotions induced by playing. These two ways of describing the correlation between emotions and experience are interesting when the descriptors *Rumination* and *Reflection* are added. These two descriptors are ways to handle or control the cognitive and emotional duress placed upon players in the tilt situations presented by *Losses* (Browne, 1989; Palomäki, Laakasuo, & Salmela, 2012a, 2012b, 2013). The findings of this article show that players with higher PES scores tend to ruminate less than players with low PES scores, while reflection had no correlation with PES scores. Beyond this, the article states that poker playing experience does not, conclusively, alter self-rumination or self-reflection tendencies. Gathering these points shows that poker players

who are predisposed to ruminate less, tend to gather more experience across their poker career, than their counterparts. *Losses* tend to act as an instigator for players to experience a tilt process (Browne, 1989).

8.1.2 Palomäki, Laakasuo, & Salmela (2012b)

The second article in this line of evidence is written by Palomäki, Laakasuo, & Salmela (2012b). This article is also a correlational online study utilizing a survey. The study had a test population of 417, where 386 are male and 31 are female. The age range of the participants was 16 to 61, where 180 of the participants had no university background, and 61 had a masters degree. The aim of this study was to look at experience as a protective factor, or a predisposing factor, in regards to tilt.

The article applied 4 measurements in order to gather information about the participants' experience with poker, the self-perceived impact the experience has on tilt and the severity of the tilt they experienced. The 4 measurements are as follows:

- Poker playing Experience Scale (PES)
- Perceived Effect of Experience on Tilting (PEET)
- Sensitivity to Losses (SL)
- Severity of Tilting (ST)

All these measurements are based on Likert scales. Using these tools, Palomäki, Laakasuo, & Salmela were able to gather necessary data in order to be able to answer their hypothesis. In a study like this, there are variables that need to be addressed. The variables in this study were as follows:

Independent variables

- Population
- Experience
- Perceived effect of experience on tilting
- Sensitivity to losses

Dependent variables

- Severity of Tilt

Frequency count

Our frequency count showed, that *Losses* (Counted 62 times, as the 6th most counted word), *Emotions* (Counted 35 times, as the 12th most counted word), *Losing* (Counted 26 times, as the 18th most counted word), *Feelings* (Counted 19 times, as the 34th most counted word), and *Behavior* (Counted 17 times, as the 40th most counted word), were the most relevant descriptors to our keywords. The raw data can be found in appendix (18.6)

8.1.2.1 Content analysis

The five descriptors that were found in this article, were inferred based upon the keywords, emotion work, loss of control, and deviation. The descriptors *Emotions,* and *Feelings* were inferred based on the keyword emotion work. *Losses, Losing* and *Behavior,* were inferred from the keywords loss of control and deviation. The keywords *Emotions* and *Losses,* were inferred based on the same arguments as the previous study, *Feelings,* and *Losing,* are inferred on a similar argument, that is Browne's (1989) description of tilt, and the importance of losing to the increased risk of tilt, as well as the negative feelings, understood as emotions that a player has to cope with, during deviations in a game. The descriptor *Behavior,* was new to our frequency count, and is inferred based on loss of control. Loss of control in this case, is related to the players' *Behavior*, as in risk management, and decision making, during the game (Browne, 1989). Browne describes loss of control as consisting of both an emotional and game management aspect, and the *Behavior* we find in our frequency count, is therefore inferred based on the behavior change that happens when loss of control occurs.

Next, we will be using the descriptors to analyze the results of this article. Looking at these descriptors will highlight the inherent connection between *Emotions* and *Feelings,* as well as *Losses* and *Losing*. The fact that there are two main descriptors revolving around the keyword emotion work confirms the importance of the aspect emotions, when discussing the topic of tilt. As stated earlier in the current dissertation, tilt is described as a result of an

emotional process (Browne, 1989). Using this understanding of tilt clarifies the reasoning behind the abundance of descriptors involving emotions when working with tilt. When looking at the combination of *Losses* and *Losing*, it is necessary to understand tilt as a process. Two questions that are relevant in describing the early stages of the tilt process could be: What instigates it and why does the process develop like it does? Tilt situations are named as the first phase of tilt (Browne, 1989), and it is in this phase the players will experience a situation that induces emotions with a negative impact that need to be controlled. There are several tilt situations described in Browne's article describing tilt from 1989, and losing is one of the factors. Losses will induce an urge to perform better or avoid losing more and this can pressurize individuals to tilt. This article suggests that loss-induced feelings, i.e. anger, frustration or injustice, are the core instigators of tilt (Browne, 1989).

Behavior was the final descriptor highlighted in this article, *Behavior* is inferred based upon Browne's (1989) description of behavior changes, related to game management, when a player loses control, due to tilt. The descriptions of behavior that Pälomaki, Laakasuo, & Salmela use in their article, are related to loss of control, through the description of excessive gambling behavior and chasing behavior (Browne, 1989; Rosenthal, 1995). This is specifically mentioned, as an indication from their results, that the risk of severe tilting, which they relate to time spent gambling, is similar to problematic gambling behavior, which is also linked to time spent gambling (Hopley & Nicki 2010; Hopley, Dempsey, & Nicki, 2012).

8.1.3 Strength of evidence assessment

The following segments will, through the Principles of Research Quality table (DFID, 2014), showcase the strengths of the literature from the literature review. This is done to assess the relative strength of both our literature and our review resulting analysis.

Table 1: First line of evidence

In the following segment the first line of evidence will be discussed and highlighted.

Principles of Quality	Questions	**Palomäki, Laakasuo, & Salmela (2012a)**	**Palomäki, Laakasuo, & Salmela (2012b)**

Conceptual framing			
Question 1	Does the study acknowledge existing research?	TRUE	TRUE
Question 2	Does the study construct a conceptual framework?	FALSE	FALSE
Question 3	Does the study pose a research question or outline a hypothesis?	TRUE	TRUE
Transparency			
Question 1	Does the study present or link to the raw data it analyses?	FALSE	FALSE
Question 2	What is the geography/context in which the study was conducted?	Finland / Online poker	Finland / Online poker
Question 3	Does the study declare sources of support/funding?	TRUE	TRUE
Appropriateness			
Question 1	Does the study identify a research design?	TRUE	TRUE
Question 2	Does the study identify a research method?	TRUE	TRUE
Question 3	Does the study demonstrate why the chosen design and method are well suited to the research question?	FALSE	FALSE
Cultural Sensitivity			
Question 1	Does the study explicitly consider any context-specific cultural factors that may bias the analysis/findings?	TRUE	TRUE
Validity			
Question 1	To what extent does the study demonstrate measurement validity?	Low to moderate	Low to moderate
Question 2	To what extent is the study internally valid?	Low	Low
Question 3	To what extent is the study externally valid?	Moderate	Moderate
Question 4	To what extent is the study ecologically valid?	Moderate to low	Moderate to low
Reliability			
Question 1	To what extent are the measures used in the study stable?	Low	Low
Question 2	To what extent are the measures used in the study internally reliable?	Low	Low

Question 3	To what extent are the findings likely to be sensitive/changeable depending on the analytical technique used?	Moderate	Moderate
Cogency			
Question 1	Does the author 'signpost' the reader throughout?	TRUE	TRUE
Question 2	To what extent does the author consider the study's limitations and/or alternative interpretations of the analysis?	Moderate	Moderate
Question 3	Are the conclusions clearly based on the study's results?	TRUE	TRUE

Measurement validity

Specifically we question the measurement validity of the articles, based on the fact that in Palomäki, Laakasuo, & Salmela (2012a) they used one validated measurement, as well as an unvalidated one, because they were validating their own tool. In the study Palomäki, Laakasuo, & Salmela (2012b), they again used their own, now previously used tool, but in addition used three new unvalidated measurements, to measure different aspects of tilt.

All the measurements have face validity, but are limited in their accuracy control, as the researchers do not test the accuracy in their study. Of the different measurement tools used, the Poker Experience Scale is the most questionable in its use, as Palomäki, Laakasuo, & Salmela (2012b) argue that the scale, has been shown to be *"a realistic measure of players' level of poker-related skill and knowledge"*, which seems doubtful, as the scale itself only examines experience, with the sole exception being the type of play one engages in, which with few exceptions, can be completely unrelated to the skill level of the player (Ericsson, 2012 ;MacNamara, Hambrick, & Oswald, 2014; Richard, Abdulla, & Runco, 2017). This creates doubts of the content validity of the PES scale, and its use in these studies, which limits the overall quality of the research. Looking at the Severity of Tilting scale, there are issues with the construct validity, as the scale is measuring frequency, and not the emotional severity the name suggests. This can be observed because the scale does not relate to any other type of scale or theory, that measures the severity of an emotional response.

Internal validity

Due to the number of unvalidated measurements, and the lack of explicit tools to limit or find confounding variables, we inferred the internal validation to be low through both articles. On top of this, the lack of a theoretical framework, means that the strength of these results are limited, as they cant show causality, but only suggest correlations.

External validity

In the context of online poker, tilt, and our understanding of tilt, the external validity of these articles seems moderate. It is plausible that they can be replicated across multiple contexts, and our second line of evidence, has found similar results, which shows as much. But there are limitations, especially considering all current studies are done in european or north american contexts, and this line of evidence in particular is done in a Finnish context, which limits the applicability of this research in outside contexts.

The main issue of external validity in this line of evidence, is related to the explicit use of tilt, through the measurement, which might prime the participant's response, a bias which is not taken into account in the creation of the measurement.

Ecological validity

The ecological validity of this line of evidence is to our understanding moderate to low, they limit their interference, by letting their subjects do surveys on their own time, as well as in environments that they themselves decide. As mentioned in relation to the external validity, the research group uses measurements, which specifically prompts tilt as a word throughout their survey, and a risk that the results will be impacted somewhat can hence be inferred.

Stability

There is no control of the study settings or of any factors related to the current health, emotional state or fatigue of the participants, which all create possible inconsistencies with the reliability of the surveys.

On top of that the majority of the measurements used in this line of evidence are unvalidated, and previously untested, they are primarily based on the Likert scale, but there is no certainty that the measurements are stable or consistent.

Internal reliability

All the measurements are tested for internal reliability with Cronbach's alpha, which on the individual measurements, range from .80 to .91, meaning that the measurements have at least good internal reliability.

Analytical reliability

Unlike the measurements, the analytical approach is well documented and well described, but still reliant on results which are more in doubt, based on the strength of the measurements, so we will therefore consider it to be moderately strong.

Study limitation and alternative interpretations of analysis

In this line of evidence, Palomäki, Laakasuo, & Salmela consistently provide alternative interpretations of their own analysis, exploring the weakness of their methodological approach, and correlation issues. This is on top of the general study limitations that they describe. We will therefore consider their approach to limitations of the study moderate.

8.1.4 Summary of the first evidence line

This sums up the first line of evidence and the research groups findings. In the following segment the keyword descriptors and the findings of the articles will be summarized and analyzed in their collective meaning. The descriptors have been placed into two categories; descriptors mentioned in both articles, and descriptors mentioned in one article. *Emotions* and *Losses* are in the first category and are mentioned in both articles. *Losing, Feelings, Rumination, Reflecting* and *Behavior* are all mentioned in one article.

Looking at the first of the repeated and similar descriptors, *Emotions,* will be vital in order to better understand tilt and its implications. Through part two of the current dissertation, emotion theory will be applied to better nuance the description of tilt that was brought forward by Browne (1989). Emotion theory will also aim to describe the descriptors, *Rumination, Reflection* and *Behavior.* Applying emotion theory to look at emotions' influence on a tilt process will add a nuanced understanding of tilt, but adding an understanding of the cognitive coping tendencies of individuals experiencing tilt processes will add a deeper value.

Looking at the second repeated descriptor, *Losses*, and its similar descriptor, *Losing,* brings about a different theoretical perspective. Applying a performance psychological perspective to the findings, and the two descriptors, of the articles above, will allow a better understanding of how the emotional process of tilt has an impact on performance, as well as how the risk of tilt can be minimized. Our first line of evidence, finds several aspects of tilt that can be expanded upon by using performance psychological perspectives.

8.2 Characterization of the second evidence line

The second line of evidence we will look at is the research group led by Moreau. They have written three articles that were deemed relevant to be reviewed in the current dissertation. The first of these articles will be their article from 2017 (Moreau, Delieuvin, Chabrol, & Chauchard, 2017). The second article is from 2020 (Moreau, Sévigny, Giroux, & Chauchard, 2020). This will be followed up by the third and final article, an article that was also published in 2020 (Moreau, Chauchard, Sévigny, & Giroux, 2020).

8.2.1 Moreau, Delieuvin, Chabrol, & Chauchard (2017)

The first article in this line of evidence is written by Moreau, Delieuvin, Chabrol, & Chauchard in 2017. This study utilizes an online questionnaire in order to gather its data. The study has a test population of 263, where 228 are male and 35 are female. The article applied 4 measurements in order to gather the information needed to create the desired tool. The aim of the study was to allow the authors to create a tool to measure tilt episode frequency in a sample of online poker gamblers' group.

The 4 tools used to gather this data were as following:

- Online Poker Tilt Scale (OPTS)
- The Problem Gambling Severity Index (PGSI)
- Dissociative Experience Scale II (DES-II)
- The Brief Sensation Seeking Scale (BSSS)

These tools were utilized in order to study the tilt frequency and severity in the test population. In a study like this, there are variables that need to be addressed. The variables in this study were as follows:

Independent variable:

- Population

- Play volume

- Frequency of experiencing tilt

- Problem gambling severity

- Dissociative experience

- Sensation seeking

Dependent variable:

- Frequency of the different aspects of tilt - measured with OPTS

These variables had an influence on the content the articles found, which will be clarified and explicitated in the following segment.

Frequency count

Our frequency count showed, that *Behavioral* (Counted 37 times, as the 11th most counted word), *Emotional* (Counted 28 times, as the 16th most counted word), *Control* (Counted 27 times, as the 17th most counted word), *Feel* (Counted 19 times, as the 33th most counted word), and *Dissociation* (Counted 15 times, as the 48th most counted word), were the most relevant descriptors to our keywords. The raw data can be found in appendix (18.7)

8.2.1.1 Content analysis

The five descriptors that were found in this article, were inferred based upon the keywords, emotion, loss of control, deviation, and dissociation. The descriptors *Emotional*, and *Feel* are considered semantic variations of the descriptors, *Emotions* and *Feelings,* that were discussed in the previous line of evidence. These descriptors are connected to the keyword emotion work. In this same vein, is the descriptor *Behavioral*, which was presented in a previous frequency count, and is connected to the keywords loss of control and deviation, on

top of that is the descriptor *Control,* which is related to the keyword loss of control. *Control* is essential to our understanding of tilt, because it is the lack of control that defines tilt as a phenomenon (Browne, 1989). According to Browne, tilt is the pathway from controlled to uncontrolled play, through a lack of effective emotional coping with a tilt situation. The final descriptor we inferred from this article is *Dissociation,* which is directly linked to the keyword dissociation. Dissociation as part of the tilt proces, is argued as the final response to an uncontrollable situation (Browne, 1989).

Next, we will be using the descriptors to analyze the results of this article. The article states that: "*Tilt is an emotional process leading to a loss of control that negatively impacts the player's decision-making*" (Moreau, Delieuvin, Chabrol, & Chauchard, 2017). This way of understanding tilt is consistent with the understanding presented by Browne (1989). It can also be viewed as a guideline to understand the descriptors that were highlighted above. The descriptors *Emotional* and *Feel* have a direct connection due to the emotional process that tilt is described as. *Control* also has this direct connection to the description of tilt, in that tilt implies a loss of control. The descriptors *Behavioral* and *Dissociation* will be added to the description of tilt derived from the quote. *Behavioral* can be looked at, as an understanding that the behavior of the player that is experiencing tilt deviates. A result of this could be the loss of control that is mentioned in the quote above. This is due to behavior being a vital aspect as to how we reason and structure our performance. Loss of control through *Dissociation* can be looked at through the quote as well in a similar fashion. Loss of control through dissociation has two implications: loss of control of gamesmanship, as well as loss of emotional control. That means, the player demonstrates a lack of connection with themselves, the situation and their behavior. This matches the description Browne brought forward through his study. Looking at dissociation in this context can be a direct way of describing why tilt has a negative impact on emotional control (Browne, 1989; Palomäki, Laakasuo, & Salmela, 2013).

8.2.2 Moreau, Sévigny, Giroux, & Chauchard (2020)

The second article in this line of evidence is written by Moreau, Sévigny, Giroux, & Chauchard in 2020. This article also utilizes an online questionnaire to gather information that could aid in answering the hypothesis and research questions set. The study had a test population of 291, where 272 are male and 19 are female. The mean age of the participants was 33.8. The aim of this study was to look at frequency of tilt episodes, the participants perception of said episodes and excessive gambling in relation to poker.

The article applied the following 5 tools to gather their information leading to a potential answer to their hypothesis.

- The Problem Gambling Severity Index (PGSI)

- Impulsive Behavior Scale (UPPS)

- Hospital Anxiety and Depression Scale (HADS)

- Severity of Tilting Scale

- Online Poker Tilt Scale (OPTS)

These tools were utilized to gather data that could answer the questions the authors had about frequency of tilt episodes, severity of the tilt episodes, as well as looking into typical excessive gambling behavior in relation to online poker. In a study like this, there are variables that need to be addressed. The variables in this study were as follows:

Independent variables

- Problem gambling severity index (PGSI)

- Impulsive behavior scale (UPPS)

- Severity of tilt scale

- Online Poker Tilt Scale (OPTS)

Dependent variables

- Self-perceived frequency of tilt

Frequency count

Our frequency count showed, that *Behavior* (Counted 36 times, as the 10th most counted word), *Anxiety* (Counted 21 times, as the 24th most counted word), *Depression* (Counted 21 times, as the 25th most counted word), *Emotions* (Counted 20 times, as the 26th most counted word), *Results* (Counted 20 times, as the 28th most counted word) *Perceived* (Counted 18 times, as the 32nd most counted word), *Risk* (Counted 18 times, as the 33rd most counted word), and *Control* (Counted 15 times, as the 36th most counted word) were the most relevant descriptors to our keywords. The raw data can be found in appendix (18.8)

8.2.2.1 Content analysis

The eight descriptors that were found in this article, were inferred based upon the keywords, emotion work, loss of control, and deviation. The descriptors, *Behavior, Depression, Emotions, Control* have all been accounted for in previous articles, *Depression* and *Emotions* are inferred by the keyword emotion work, whereas *Behavior* and *Control,* are inferred by loss of control and deviation. The newly found descriptors are *Anxiety, Results, Perceived* and *Risk.* The descriptor *Anxiety* is inferred by the keyword emotion work. *Anxiety* as an emotional response to the negative experience of tilt, is a connection which was observed by Pälomaki, Laakasuo, and Salmela (2013) during their study of tilt narratives, from finnish poker players. The descriptors *Result, Perceived* and *Risk,* are inferred by loss of control, and deviation. These four descriptors are part of a whole, which is related to Browne's (1989) description of tilt development. He argues actions or results, which are perceived negatively, increases the risk of tilt among poker players. Should this happen, the player may start chasing a winning situation, increasing both risk-taking and risk-seeking behavior (Browne, 1989).

Next, we will be using the descriptors to analyze the results of this article. *Behavior* is the first descriptor from this article and is repeated from other articles in the current review. The findings and results of this article focuses on the effect tilt can have on a player's behavioral tendencies (Browne, 1989; Palomäki, Laakasuo, Salmela, 2013). The article states that a player that is not able to identify their tilt frequency, has an increased risk of developing

excessive gambling behavior. The article describes *Transitory Behavior* as part of the description of tilt, as it is a state you transition into and out of, through the tilt process. Experiencing a tilt process will cause the player to deviate from their behavioral and emotional norms, which can cause a disruption in the player's *perceived* state of *control*. When a player experiences this change in *control*, they can find themselves at an increased risk of tilting. Looking at tilt in this fashion means that tilt must be looked at as a phenomenon that can be caused both by internal and external factors. *Emotions* and emotional states play a massive role in tilt, going back to Browne (1989) and his description of tilt, but tilt situations can occur as an external factor, inciting the tilt process. As an extension of emotions, this article also has a focus on both *Anxiety* and *Depression*. These two factors were looked at in association with tilt frequency, and the findings were that players who were categorized by their anxiety and depression scores had a higher perceived tilt frequency, than players who were categorized as non-problem gamblers.

8.2.3 Moreau, Chauchard, Sévigny, & Giroux (2020)

The third and final article in this line of evidence is written by Moreau, Chauchard, Sévigny, & Giroux in 2020. This article also utilizes an online questionnaire to gather information that could aid in answering the hypothesis. The data utilized in this article is the same data utilized in their previous article from the same year. The study had a test population of 291, where 272 are male and 19 are female. The median age of the participants was 33.8. The findings of this study found that there was a strong correlation between tilt frequency and cognitive distortion in regards to excessive online gambling.

The article applied the following 5 tools to gather their information leading to a potential answer to their hypothesis.

- The Problem Gambling Severity Index (PGSI)
- Impulsive Behavior Scale (UPPS)
- Hospital Anxiety and Depression Scale (HADS)
- Online Poker Tilt Scale (OPTS)

- The Gambling Related Cognition Scale (GRCS)

These tools were utilized to gather data that could answer the questions the authors had about frequency of tilt episodes and the correlation to excessive online gambling. The study also looked for a correlation to anxiety, where it found a moderate to low correlation. In a study like this, there are variables that need to be addressed. The variables in this study were as follows:

Independent variables

- Problem Gambling Severity Index (PGSI)

Dependent variables

- Impulsive behavior scale (UPPS)

- Online Poker Tilt Scale (OPTS)

- Hospital Anxiety and Depression Scale (HADS)

- The Gambling Related Cognition Scale (GRCS

Frequency count

Our frequency count showed, that *Impulsivity* (Counted 40 times, as the 10th most counted word), *Cognitive* (Counted 33 times, as the 11th most counted word), *Depression* (Counted 31 times, as the 12th most counted word), *Anxiety* (Counted 30 times, as the 14th most counted word), *Control* (Counted 27 times, as the 17th most counted word) *Results* (Counted 25 times, as the 21st most counted word), *Distortions* (Counted 24 times, as the 22nd most counted word), *Behavior* (Counted 19 times, as the 37th most counted word) *Loss* (Counted 18 times, as the 42nd most counted word), *Risk* (Counted 18 times, as the 45th most counted word) and *Emotions* (Counted 17 times, as the 46th most counted word) were the most relevant descriptors to our keywords. The raw data can be found in appendix (18.9)

8.2.3.1 Content analysis

The eleven descriptors that were found in this article, were inferred based upon the keywords, emotion work, loss of control, and deviation. Of the descriptors, nine of them had

been presented in the previous articles, these descriptors are, *Cognitive, Depression, Anxiety, Control, Results, Behavior, Loss, Risk,* and *Emotions*. These are shared between the three keywords in this way, *Depression, Anxiety, Emotions* are inferred by emotion. *Cognitive, Control, Results, Loss, Risk* and *Behavior*, are inferred by loss of control and deviation. The two new descriptors are *Impulsivity* and *Distortions,* which are inferred by deviation and loss of control. *Impulsivity* is inferred based on the behavioral changes that Browne (1989) describes as the result of tilting, and the related behaviors, such as chasing. Chasing is also described as a cognitive distortion, which leads directly into the second new descriptors *Distortions*. Cognitive distortions are related to tilt, as the type of resulting behavior, that amplifies problematic gambling behavior.

Next, we will be using the descriptors to analyze the results of this article. This article acts as the first empirical support to Browne's (1989) hypothesis regarding tilt being a gateway to problematic gambling *Behavior* in poker. The article also provided further evidence that *Emotions* played a role in defining and describing tilt as a phenomenon. It furthermore backed the findings that *Anxiety* and *Depression* had an association with tilt frequency. On top of that, a behavioral descriptor, *Impulsivity*, was described to also have a strong association with tilt frequency. The topics of *Control, Loss* and *Results* were all highlighted due to their significance in describing tilt as a phenomenon. These descriptors are repeated due to the significance of Browne (1989) and the description of tilt that is taken from this article. It remains, to this day, the cornerstone of tilt research, as is seen by this article, being published in 2020 and only now finding empirical support of Browne's hypothesis.

8.2.4 Strength of evidence assessment

Table 2: Second line of evidence

In the following segment the second line of evidence will be discussed and highlighted.

Principles of Quality	Questions	Moreau, Delieuvin, Chabrol, & Chauchard (2017)	Moreau, Sévigny, Giroux, & Chauchard (2020)	Moreau, Chauchard, Sévigny, & Giroux (2020)

Conceptual framing				
Question 1	Does the study acknowledge existing research?	TRUE	TRUE	TRUE
Question 2	Does the study construct a conceptual framework?	FALSE	TRUE	TRUE
Question 3	Does the study pose a research question or outline a hypothesis?	TRUE	TRUE	TRUE
Transparency				
Question 1	Does the study present or link to the raw data it analyses?	FALSE	FALSE	FALSE
Question 2	What is the geography/context in which the study was conducted?	France & Quebec / Online poker	France & Quebec / Online poker	France & Quebec / Online poker
Question 3	Does the study declare sources of support/funding?	TRUE	TRUE	TRUE
Appropriateness				
Question 1	Does the study identify a research design?	TRUE	TRUE	TRUE
Question 2	Does the study identify a research method?	TRUE	TRUE	TRUE
Question 3	Does the study demonstrate why the chosen design and method are well suited to the research question?	FALSE	FALSE	FALSE
Cultural Sensitivity				
Question 1	Does the study explicitly consider any context-specific cultural factors that may bias the analysis/findings?	TRUE	TRUE	TRUE
Validity				
Question 1	To what extent does the study demonstrate measurement validity?	Low to moderate	Moderate	Moderate
Question 2	To what extent is the study internally valid?	Moderate	Moderate	Moderate
Question 3	To what extent is the study externally valid?	Low	Moderate	Moderate
Question 4	To what extent is the study ecologically valid?	Moderate	Moderate	Moderate

Reliability				
Question 1	To what extent are the measures used in the study stable?	Low to moderate	Moderate	Moderate
Question 2	To what extent are the measures used in the study internally reliable?	Moderate	Moderate	Moderate
Question 3	To what extent are the findings likely to be sensitive/changeable depending on the analytical technique used?	Moderate	Moderate	Moderate
Cogency				
Question 1	Does the author 'signpost' the reader throughout?	TRUE	TRUE	TRUE
Question 2	To what extent does the author consider the study's limitations and/or alternative interpretations of the analysis?	Moderate to low	Moderate to low	Moderate to low
Question 3	Are the conclusions clearly based on the study's results?	TRUE	TRUE	TRUE

Measurement validity

The second line of evidence has a moderate measurement validity based on the fact that the research group primarily uses well validated tools, as well as their own tool, which they first validate, and then repeatedly use as an efficient measurement. The main measurement which is validated throughout these studies, is the Online Poker Tilt Scale. The scale is validated in the first study, while also having a detailed description of the creation process, giving it additional face validity. The scale is consistent with the current understanding of tilt, and shows construct validity through that. Issues with this validity are still relevant, as the current understanding of tilt is limited, and the questions in this scale assume correlations to behavior, which is not theoretically or empirically described. The reason for these questions is detailed in the creation process, and are therefore usable. The researchers realized ANCOVA to test the convergent validity, to further support the construct validity of their research.

Internal validity

The internal validity of the second line of evidence is moderate because they are consistently using validated tests, as well as statistical tools, to be able to check for confounding variables. While no perfect approach exists, they consistently apply principles of quality to attempt to get ahead of the issue of internal validity.

There is, though, the same major issue as in the first line of evidence, which is that no causal relationships can be established, based on the measurements and design of these studies.

External validity

Across the entire line of evidence the external validity is moderate, because they are applying a structured, validated set of measurements, which takes a large number of variables into account. As well as their results being consistent with previous research on the topic of tilt, it is likely that the results can be replicated to some extent. They are still limited based on their research population and context.

Ecological validity

The study is moderate in respect to ecological validity, this is because they are limiting their influence on their subjects, to the surveys themselves. As well as the tilt measurements used in this line of evidence, are implicit, meaning that the subjects of the research are prompted to consider tilt directly, but are indirectly surveyed, based on the questions in the measurement.

Stability

The stability in the second line of evidence, is considered moderate, because they are using a set of validated measurements, which are individually stable, with the exception, being their own tilt scale, as a limiting factor. The measurements are still surveys, and done in uncontrolled environments, with no way to observe the individual participants, which leads to stability issues.

Internal reliability

The internal reliability is considered moderate, because no major issues were found in the statistical work of the researchers, as they used Cronbach's alpha to test for internal reliability. However, because the raw data is not available, it is unclear whether or not the complete picture is provided. All but one of the measurements have been previously validated, without internal reliability issues. The one measurement which was validated through the research process, showed no internal issues when finished.

Analytical reliability

The second line of evidence, is all based on statistical analysis, which is well documented and described, this suggests a moderate score, as the data is still survey data from subjective perspectives, which could be interpreted differently with a different approach.

Study limitation and alternative interpretations of analysis

We consider this aspect of the quality check to be moderate to low, in this line of evidence. The reason for this assessment is based on the fact that even though the researchers consider their study limitations, they are not considering alternative interpretations of their own analysis. For example, in the study by Moreau, Sévigny, Giroux, Chauchard (2020) they argue that the incapability to identify tilt episodes, might lead to behavior that puts players at risk for excessive gambling. Whereas you could argue that it might be the excessive behaviors that increase the frequency of tilt episodes, which leads players to develop cognitive distortions, which over or underestimate the amount of tilt they experience.

8.2.5 Summary of the second evidence line

This sums up the second line of evidence and the findings of the research group. In the following segment the keyword descriptors and the findings of the articles will be summarized and analyzed in their collective meaning. The three articles found five, nine and ten descriptors respectively. The descriptors are placed in three categories based on the amount of articles the descriptor is highlighted. *Behavior, Emotion* and *Control* were highlighted in all three articles. *Risk, Results, Anxiety* and *Depression* are mentioned in both the 2020 articles. The descriptors that are mentioned in a single article as following: *Feel*

and *Dissociation,* from the first article, *Perceived* in the second article, and *Impulsivity* and *Loss*, from the third article.

Through our content analysis, we found that the articles relied heavily on describing tilt using emotion and control as key concepts of what tilt is, and its primary implications. This is because of the way tilt is understood, based on Browne and his description from 1989. Browne uses a description of tilt that talks about emotion, loss of control and implications on behavior. Looking at this description, and the descriptors above, it is possible to understand the articles' focus on tilt as a phenomenon. Of the three articles, the two newest articles, both published in 2020, highlight *Anxiety* and *Depression*, both of which are emotional states that act as both a risk factor for tilting, and as an implication of experiencing tilt. Other emotional states or similar descriptors to emotions are: *Feel* and *Dissociation.* Beyond that, *Risk* and *Impulsivity* are highlighted as factors of risk seeking behavior, which can be attributed to gambling behavior.

This leaves the following descriptors: *Losses, Results* and *Perceived.* Looking at these descriptors allows us to group *Losses* and *Results* together as a potential tilt situation (Browne, 1989). The descriptor *Perceived* is interesting to combine with our understanding of abilities, as a high ability to play poker should reduce the risk of tilt (Palomäki, Laakasuo, & Salmela, 2012b), however, having a higher perceived ability could act as an increased risk of tilting. Moreau, Sévigny, Giroux, & Chauchard (2020), an article in this group, also found that players who lack the ability to perceive their tilt frequency and tilt process, are at an increased risk of developing an excessive gambling behavior. This highlights the importance of increased transparency and understanding of tilt as a phenomenon.

Looking at these descriptors and the results highlighted through the segments above, we arrive at the conclusion that tilt is best described using emotion theory to describe the emotional process that tilt entails. We aim to apply a performance psychological perspective to address the descriptors that regard results and performing in high pressure situations, like a gambling situation. Intrasubjectivly we consider a metacognitive approach to intervention would aid individuals who have experienced tilt alter their cognition. Moving forward, we will

look to compile the findings of both lines of evidence, moving towards a more nuanced understanding of tilt as described in the literature at hand.

8.3 Results

In the following segment the keyword descriptions within the lines of evidence will be compiled. After this has been done, the strength of evidence tables will be compiled in order to determine the strength of the characterization derived from the literature. These two processes will be done in order to provide an overview and insight regarding the findings and the strength of the methodology utilized to compose them.

The description of tilt in the body of evidence of the current dissertation is consistent with the description of tilt provided by Browne (1989). Through our content analysis, we found common descriptors that described tilt in a consistent fashion. The way tilt is described in this body of evidence is also consistent with Browne's (1989) description of tilt in his article that laid the groundwork for understanding tilt as a phenomenon within poker.

Looking at the descriptors from the body of evidence, reveals that some of the descriptors are repeated across the majority of the literature. This highlights them as a potential characterization of tilt. The main descriptor, that was consistent through all the literature at hand was *Emotion. Behavior* was highlighted in four articles, *Loss/Losing* and *Control* in three separate articles. We have created a cutoff for the descriptors at three articles due to three being the majority score of the body of evidence. Beyond that, looking at the descriptors highlighted in one or two articles respectively, they have a tendency to have similarities to the more prevalent descriptors, i.e. *Feelings* to *Emotions.*

Looking at the four descriptors that were prevalent above the cutoff score, *Emotion, Behavior, Loss/Losing* and *Control*, will aid in describing tilt. These descriptors are based on the keywords derived from Browne (1989), and thereby show that the description of tilt that Browne presented lays the foundation for the way the body of evidence views tilt as a phenomenon.

As described in the summaries for the lines of evidence, the descriptors reveal the applicability of different theoretical perspectives. Emotion theory is an obvious choice due to emotions being highlighted in all the articles in the body of evidence, however, the theory chosen should also aid in the description of the other descriptors. Beyond that, we looked for the other theoretical perspective described in the segments above; Performance psychology. The performance psychological perspective chosen should naturally address *Losing/Losses.* Beyond addressing this, the theory should also focus on other descriptors, allowing for an overlap of theory. This would strengthen the arguments for implication of theory, and the intervention chosen to handle the problems created by the tilt process. Therefore we must find an intervention that addresses all the descriptors.

Study results

When considering the results of the individual studies, then we have to consider the strengths and weaknesses of their methodology, and apply our quality check before drawing any conclusions. With that in mind, the tendencies throughout the body of evidence are correlations, without a way to determine causality. From the body of evidence that we worked with, the most significant results in the context of our work, is the support for the hypothesis (Moreau, Chauchard, Sévigny, & Giroux, 2020), and the relationship between experience and a reduced frequency of tilt (Palomäki, Laakasuo, & Salemela, 2012b). The hypothesis that Browne (1989) originally set forth was that Increased occurrences of tilt, were correlated with a higher risk of problematic gambling behavior. Support for this hypothesis was for the first time found in the article Moreau, Chauchard, Sévigny, & Giroux (2020). Lending credence to the importance of understanding this phenomenon, so that we can more effectively intervene against problematic gambling. Similarly is it significant that Palomäki, Laakasuo, & Salemela (2012b) found a connection between a players experience, and the frequency of tilt episodes, as it suggests a performance related connection between the tilt and its frequency.

Strength of evidence

The first line of evidence has consistent issues with their measurements, most of the measurements used are unvalidated, and are freshly created for the survey. They validate their primary measurement (Poker Experience Scale) through the two articles, but it has not been used or tested in any other research, and is therefore still doubtful in its applicability.

The remaining measurements are, with one exception, a number of scales that the authors themselves created and used with little to no transparent testing. The sole exception is their rumination and reflection scales, which are validated and well tested previously to the use in these studies.

The second line of evidence has a consistently moderate approach, with the primary weaknesses in their first article. The line is marked by a research approach with relatively few limitations, which induced quality issues in the results. Similarly to the first line of evidence, the second line also has measurement issues, they differ between the older and newer studies, the first study is a validation of their tilt scale, and is therefore using an unvalidated scale, this scale is validated and used throughout the next studies, which supports the results from the first article.

How strong is the current body of evidence?

According to the strength of evidence approach, we would consider the strength of our body of evidence to be moderate to low. There are consistent issues in each of the evidence lines, as well as throughout both. None of the articles in our body of evidence attempts to argue why their approach is suitable, and no article gives access or an overview of the raw data that they compiled. Both lines of evidence have problems with their measurements, though this is most prevalent in the first line of evidence.

8.4 Quality assessment of the current synthesis

In the following segment, the tool used above to determine the strength of the evidence will be applied to the current dissertation. This is done to determine the strength of our dissertation, in relation to the literature at hand. This is relevant to look at as it will help us

discover where we might need to apply our theoretical perspectives and methodological approaches in order to strengthen our dissertation as a whole, while also addressing the current strengths.

Table 3: Quality of the current synthesis

Principles of Quality	Questions	Henriks, Hansen (2021)
Conceptual framing		
Question 1	Does the study acknowledge existing research?	TRUE
Question 2	Does the study construct a conceptual framework?	TRUE
Question 3	Does the study pose a research question or outline a hypothesis?	TRUE
Transparency		
Question 1	Does the study present or link to the raw data it analyses?	TRUE
Question 2	What is the geography/context in which the study was conducted?	Studies regarding tilt in online poker
Question 3	Does the study declare sources of support/funding?	TRUE
Appropriateness		
Question 1	Does the study identify a research design?	TRUE
Question 2	Does the study identify a research method?	TRUE
Question 3	Does the study demonstrate why the chosen design and method are well suited to the research question?	TRUE
Cultural Sensitivity		
Question 1	Does the study explicitly consider any context-specific cultural factors that may bias the analysis/findings?	FALSE
Validity		
Question 1	To what extent does the study demonstrate measurement validity?	N/A
Question 2	To what extent is the study internally valid?	N/A
Question 3	To what extent is the study externally valid?	Moderate to low
Question 4	To what extent is the study ecologically valid?	Moderate to low
Reliability		
Question 1	To what extent are the measures used in the study stable?	N/A
Question 2	To what extent are the measures used in the study	N/A

	internally reliable?	
Question 3	To what extent are the findings likely to be sensitive/changeable depending on the analytical technique used?	Moderate to high (low quality)
Cogency		
Question 1	Does the author 'signpost' the reader throughout?	TRUE
Question 2	To what extent does the author consider the study's limitations and/or alternative interpretations of the analysis?	Moderate to low
Question 3	Are the conclusions clearly based on the study's results?	TRUE

Measurement validity

The current dissertation does not use a tool of measurement. We do not apply a measurement to tilt, and have no empirical data to apply such a measurement on. The current dissertation focuses on the theoretical perspectives that can be derived from the literature at hand. In doing so, we aim to apply theories, taken from emotion psychology and performance psychology. This will broaden and nuance the understanding of tilt derived from the literature.

Internal validity

The current dissertation does not use a tool of measurement. This means that we do not manipulate an independent variable, and examine the effect it may have on a dependent variable. Instead we address the collected literature and the findings of them, and apply our analysis, further broadening and nuancing the understanding of tilt. Due to this being the case, we have placed a "N/A" in the table (table 3) as we deemed the factor as not applicable in the case we are addressing.

External validity

In applying a theoretical perspective to tilt that has yet to be done, we aim to highlight an intervention that can counteract the emotional processes that are induced by the tilt process. Doing this will allow us to implement this intervention in other contexts where tilt is described, such as esports, or other contexts where similar phenomena are highlighted.

Ecological validity

Tilt is described and highlighted in many situations in the poker culture. It is looked at as a tool that can be actively equipped to beat your opponent, or as a risk factor to developing lasting psychological issues. Given this, we know that tilt is a phenomenon that exists in more situations than what is described in this dissertation. Our aim is to provide research on a phenomenon that currently does not have a theoretical understanding. In doing so, we hope to aid players who experience tilt situations, regardless of the context they experience it in.

Stability

The current dissertation applies the same understanding of tilt as the literature in the review. This understanding is based on Browne (1989), and encapsulates the tilt process as a whole. Applying the same understanding, and using keywords from the cornerstone (Browne, 1989), allows us to, through a content analysis, search for themes and characteristics that describe tilt. By doing this, we can find the common tendencies of tilt across all the body of evidence and, hopefully, nuance the understanding of the phenomenon.

Internal reliability

The current dissertation does not use a tool of measurement. Due to this, there is no discrepancy between these. The articles that are represented in the review of the current dissertation have similar findings, as revealed through the content analysis above. This shows that there is minimal discrepancy between the findings within the body of evidence. However, due to the lack of validation of several of the tools, the reliability of these measurements is doubtful.

Analytical reliability

The current dissertation relies upon keywords derived from Browne (1989) and findings of the content analysis that can be connected to these keywords. This analytic method is suitable for this dissertation due to the narrative nature of the findings in the relevant

literature, however, the analytical reliability is low. Other researchers could derive different keywords, or weigh the evidence of the content analysis differently.

Study limitation and alternative interpretations of analysis

The current dissertation looks to provide clear evidence of common tendencies on the topic of tilt. This is done through comprehensively guiding the readers through an analytic process that derives characteristics from relevant literature and sets up the opportunity to apply theory to them, broadening and nuancing the understanding of tilt provided by the articles in the review. Doing this allows us to structure our arguments from a baseline understanding, and build upon the understanding applied from Browne (1989). We also aim to provide clear acknowledgement of the strengths and weaknesses of the methodological approach, by indicating how other researchers might make different interpretations and findings with the same body of evidence.

8.5 Strength of evidence summary

We consider our synthesis to be low to moderate in quality, with the additional context of working with a theoretical approach, which limits the quality assessment.

However, as we are not measuring directly, we are limiting our applicable assessment tools, which should be considered in the assessment of the work. This context does not change the fact that scientifically we are working in a context derived from a body of evidence that is, in and of itself, relatively weak in regards to scientific quality. This is on top of using a methodology that, although it is repeatable, is bound to our subjective inference from the body of evidence. We assess that while our arguments are limited in strength, the factors used in the arguments create relevance. Through our approach, we aim to create a theoretical framework, based on the descriptors that we found through our analysis.

9. Conclusion of the literary review

We will begin by describing the limitations of the methodological approach utilized throughout part one. We have limitations on the ability to generalize our findings, due to the nature of having solely poker specific literature. This means that we must find literature that describes similar processes, both emotional and cognitive, in varying situations, in order to begin the generalization. However, a theoretical framework would be implementable to descriptions of similar processes. Therefore, we aim to create such a framework.

Beyond that, our reliability of our literature review is low. This is due to the nature of the subjectivity of keywords derived from Browne (1989). We found keywords that Browne used to describe tilt, and used them throughout the analysis and review. However, we cannot guarantee that others would utilize the same keywords with the same weight of importance. This means that we must argue how and why these keywords are applicable and which impact they might have on the dissertation itself.

Even with these limitations, we found a consistent description of emotional processes throughout the body of evidence, which lends itself to the application of a more solid theoretical framework for emotional theory. The primary conclusion that we can draw, based on our literary review, is that emotion is consistently found in the description and study of tilt, but no emotional theory is brought into the research. We therefore conclude the need for these theoretical descriptions to be applied to tilt, based on the understanding from emotion theory and performance psychology.

Part 2: Theoretical discussion

In the following chapters we will aim to apply theory to the characterization of tilt that has been conducted in part one. We will look to argue how emotion theory, performance psychology and a metacognitive intervention approach can all be related to tilt, and help individuals understand the concept of tilt and the implications it may have.

10. Theoretical application of Appraisal Theory in the Tilt process

The aim of the current dissertation, and the literature review it entails, is to derive characterizations of tilt from the existing literature, in order to apply a theoretical perspective to nuance the understanding of tilt. Creating this nuanced understanding allows us to suggest a relevant and effective intervention against the implications of tilt. By combining the results of the content analysis and the findings from the articles, we managed to find two relevant psychological theoretical perspectives that had not been described in detail throughout the articles; Emotion theory and Performance psychology. The following segments will introduce and expound the theoretical perspectives elected to help describe tilt through the characterization that has been formulated through the literary review. On top of that, the relevance between the theories and tilt will be discussed.

11. Emotion theory

Within emotion theory we found that appraisal theory, described by Richard Lazarus, could help theorize the emotional aspects of the tilt process. Appraisal theory is a theory that originates as a stress and coping theory, and has later transitioned into an emotion theory. Appraisal theory has also been described in connection to athletics, as a theory to describe coping and appraisals. In the segment below, appraisal theory will be introduced and elaborated.

11.1 Appraisal theory

Appraisal theory describes a process in which emotional reactions take place. Appraisal theory theorizes a process with two phases and an emotional outcome: Primary appraisal, Secondary appraisal and an Outcome of these appraisals. We consider the emotional outcome as a third and final phase. This setup with three phases matches the three phases

of tilt, as they were described earlier in the current dissertation (See chapter 5.1). Aiming to combine Lazarus' appraisal theory and Browne's description of the tilt process means that we must look at the phases of both processes and figure out how appraisal theory can help describe the emotional processes that may be underlying in tilt. Therefore, each of appraisal theory's phases will be elaborated below. The phases will then be described in their connection to the corresponding phase in a tilt process.

11.1.1 Primary appraisal

Primary appraisal is the initial phase, and is the phase in which an appraisal of the situation at hand takes place. In this phase, the individual assesses the importance of the situation (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984). This primary appraisal creates the framework for the tilt process, by giving the situation a meaning. This is done by assessing the relevance of the situation compared to the needs of the individual, and whether the situation is congruent with the individual's goals for the situation (Scherer, Schorr, & Johnstone, (Ed.), 2001). This means that a primary appraisal, which can be an unconscious process, can be described as a reaction to a tilt situation (Browne, 1989) based on the individual's goals and needs (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984).

The term Reaction is essential to understanding how appraisal theory and tilt are congruent. A reason for this lies in Lazarus' definition of frustration as a reaction, rather than as an emotion. Frustration can be the primary reaction to the tilt situation, sparking the tilt process, and thereby inducing emotions with a negative impact, such as anger (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984). The combination of appraisal theory and Browne's tilt process highlights the first phase as a phase where the individual meets a stressor and must, through the ensuing phases, cope with the situation, or proceed with an emotional reaction. This means that, should the tilt situation result in a negative appraisal of the situation at hand and the negative emotions induced by this not be coped with, the individual risks tilting.

11.1.2 Secondary appraisal

In the secondary appraisal phase, the individual is tasked with appraising the coping potential of the situation at hand, following the primary appraisal phase (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984). This is congruent with the second phase in a tilt process, where the individual is also tasked with coping (Browne, 1989). In order for the individual to cope with these emotions, it is necessary to appraise the resources available to the individual. Through this appraisal, the individual will determine whether the situation risks becoming a stressor, or their coping mechanisms will allow them to regain the control they have lost (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984). This can also be understood as an appraisal of the potential to cope with the situation (Smith & Kirby, 2009). Beyond this, Lazarus describes this phase as having two aspects of coping, and two factors that affect the coping process. These will be placed into two subgroups and elaborated in the following segments:

Group 1: Problem Focused Coping Potential (PFCP) and Emotion Focused Coping Potential (EFCP)

PFCP is the individual's ability to cope with the situation that has arisen. In the context of poker, an example could be losing a hand that felt like a sure win, and attempting to cope with it in order to win moving forwards. The question that is asked here is whether or not the player has the strategic knowledge and gamesmanship in order to change the circumstances. The player might not have game specific knowledge, or the statistical understanding to comprehend the likelihood of the loss they suffered, in which case their PFCP would not be successful.

Another coping style is EFCP, which can be prevalent both during and after the PFCP. EFCP focuses on regaining control of the individual's emotional state. In the aforementioned context, an example of this could be that the player attempts to regain control of their emotional state, in order to focus on the situation at hand and avoid losing more. This means

that PFCP looks to get a players gamesmanship involved in creating a positive, winning appraisal of the situation, while EFCP aims to avoid further negative, losing appraisals.

Group 2: Accountability and Expectations

These two factors affect the emotional state of the individual and therefore, as seen in the segment above, also play a part in the coping process of secondary appraisal. Accountability describes the process of taking control of who has responsibility for the outcome of the situation at hand. An individual might try to avoid responsibility by giving other, more qualified, individuals more responsibility in order to gain control, while others may take responsibility on themselves to see out the situation in order to get the best possible outcome (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984).

Expectations play a big role in a tilt process, in that if expectations about a situation are not met, this can, in and of itself, be a tilt situation (Browne, 1989). In the context of poker, when an individual loses a hand that they felt was sure to win, and it thereby does not match the expected outcome of the situation, it can be described through the term "*Bad beat*" (Browne, 1989). Bad beats are described by Browne as a potential tilt situation. Should a bad beat occur, or expectations are in some other way not met, it can describe the need for coping. A negative appraisal of the situation must be deemed changeable, or the individual risks escalating the tilt process through failed coping (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984).

11.1.3 Outcome of Appraisals

Looking at appraisal theory in this context leaves two possible outcomes; Negative appraisals with failed coping causing tilt, and Appraisals with successful coping causing reappraisals and reestablishing control. We have described appraisal theory as having three phases. Originally, this is not the case, but we deemed the outcome of the appraisals to the emotional process relevant to assess in the current topic. These outcomes are simultaneously congruent with the final phase of the tilt process, and the description of tilt as a phenomenon (Browne, 1989). The third phase of a tilt process describes the loss of

emotional control following failed attempts at coping, or an improved coping mechanism through successful coping.

11.1.3.1 Failed coping

As described above, it is during the second phase, in both appraisal theory and the tilt process, that coping takes place. Should the problem focused coping not allow the individual to regain control through gamesmanship, the attention shifts to handling the emotions induced by the loss of control. Should the emotion focused coping also not allow the individual to regain control of their situation, the individual risks an emotional reaction. In the context of this dissertation, and poker, an example of such an emotional reaction could be tilt.

11.1.3.2 Tilt

Tilt is induced through failed coping. This means that when an individual fails to cope with the tilt situation they are presented with, they risk losing control of their emotions and behavior, and thereby risk experiencing tilt. This loss of control can be described as a result of dissociation, which the individuals experience when digressing from the secondary appraisal phase and into the reactionary phase.

11.1.3.3 Successful coping

Successful coping is when one of the coping strategies in the secondary appraisal phase succeeds in regaining control of the tilt situation. The problem focused coping could present an alternative strategy that allows the individual to counteract the situation that induced the tilt process. Emotion focused coping could also allow the individual to regain control of their emotional state, and thereby minimize the risk of the tilt process from escalating further.

11.1.4 Reappraisal

Reappraisal is another result of the appraisal process (Scherer, Schorr, & Johnstone, (Ed.) 2001; Lazarus & Folkman, 1984). This part of the appraisal process is about reassessing, or reappraising, the tilt process induced by the tilt situation. Reappraisal is an emotion regulating strategy, which aims to alter thought patterns. This would allow an individual to learn from the tilt situation and optimize coping strategies for similar situations moving forward. By doing this, the individual minimizes the risks of tilting. If the problem focused coping was successful, the individual may have grasped a better understanding of the situation they created, or have improved their ability to perform within their situation. If the emotion focused was successful, the individual may have created or strengthened a coping mechanism to better deal with the negative impact of emotions.

12. Performance psychology

Through our review and analysis of the relevant literature, we deemed that performance psychology was a relevant and effective theoretical perspective that would supplement emotion theory in nuancing the understanding of tilt, allowing us to describe an effective intervention approach. We will look at personality characteristics, in order to understand which aspects of personality influence performance, and which are implicated by tilt. To do this, we will utilize the five factor model to describe personality traits that are at risk of tilting. By utilizing the five factor model, we will be able to determine personality traits that are associated with performance. This will allow us to describe which aspects of personality are determining factors for performance in individual sport athletes. Furthermore, this will allow us to describe aspects of personality that are important in determining which coping strategies are likely to be utilized by different individuals. Understanding this will allow us to describe which personality traits are more at risk of tilting and thereby risk not performing optimally.

By understanding how an individual's personality impacts their performance, it becomes possible to predict negative tendencies. Furthermore, it may allow for implementation of personality based intervention approaches that aid individuals counteract these negative tendencies.

12.1 Theoretical depiction of Five Factor Model

In the following segment, we will describe the theory behind the Five Factor Model (Larsen, & Buss, 2014). Each factor will be elaborated in order to create a better understanding of which implications on performance are prescribed to personality, based on the five factor model. Doing this will allow for a deeper understanding of the five factor models' depiction of personality traits, allowing for a more consistent understanding when the factors are introduced to the tilt process described above.

Five factor model is a widely renowned theory that is utilized comprehensively in personality research regarding performance and sport psychology. This highlights the relevance is applying the traits in regards to performance, as a predictor for tendencies that have implications on said performance.

The five factor model describes personality through five personality dimensions named: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Allen, Greenlees, & Jones, 2013). Each of these dimensions has a number of traits that determine the factors' implication on an individual's overall personality. Each of the dimensions will be elaborated below. The understanding of each factor is taken from Allen, Greenlees, & Jones (2013).

Openness: Openness assesses an individuals' tendency to seek out new situations.

Conscientiousness: Conscientiousness assesses an individuals' organization and goal directed behavior.

Extraversion: Extraversion assesses an individuals' quantity and intensity of interpersonal interactions.

Agreeableness: Agreeableness assesses an individuals' concern for cooperation and social harmony.

Neuroticism: Neuroticism assesses an individuals' proneness to emotional instability.

In the following segments, these dimensions will be categorized to determine and describe which of the dimensions play a role in describing performance and can be connected to the tilt process.

12.2 Link between tilt, personality and performance psychology

The following segments will highlight the role personality plays in predicting performance. Looking at the personality factors that enhance performance could provide a better understanding of how personality traits might impair performance and/or induce tilt. We found no literature that described personality traits in a population of online poker players, yet we aim to create a theoretical framework for determining risk factors of tilt.

The relevance of personality in sport is not nearly as well developed as its work and academia counterparts. That is because the research into personality and sports performance slowed down throughout the nineties, and only started to gather momentum once again more recently (Allen, Greenlees, & Marc, 2013). Allen, Greenlees, & Marc (2013) did a literature review of the then current perspectives on personality and particularly the five factor model, and its use on athletes. A central premise for our approach to performance psychology was brought up by Allen, Greenlees, & Marc (2013), in their assessment of Beauchamp, Jackson, & Lavallee (2007). Beauchamp and his colleagues point out the importance of interjecting, and guiding players and team members, who might be in the process of developing habits that might conflict with their team, based on the personality of the people involved. Beauchamp, Jackson, & Lavallee (2007) argues in context of team sports, but similar arguments can be made for individual sports in relation to coaches and sports psychologists, and their supportive role when guiding a player towards improvement or competitive success. The importance of personality as a tool to help guide relationships,

between coaches, psychologists and players, is at the core of our research question, as we fundamentally want to assist individuals who are troubled by tilt. The five factor model can assist in not only improving relationships with players, but as we will discuss in the following segments, be used as a tool to find players who are at increased risk of experiencing a tilt process. Another central point in their finds was the correlation between personality and development of elite level athletes (Allen, Greenlees, & Marc, 2013). One of the mentioned studies was Aidman (2007), who found that personality could predict whether or not elite level talent developed into professional play, seven years later. This find signifies the long term importance of personality, on the development of athletes, and the importance of looking at personality as a way to understand the behavior and progression of athletes. Personality based on the five factor model, is a relatively stable concept, which allows any possible risk factors to be spotted well in advance of the tilt situation which, along with the previous point, is the primary arguments for the five factor models relevance.

12.2.1 Neuroticism, athleticism and poker

Neuroticism is a central aspect of performance. Low neuroticism, signifies a more emotionally stable individual, which in terms of performance, is considered beneficial. This is down to an individual's capacity to cope with relevant pressure, in performance focused environments (Allen, Greenlees, & Marc, 2013). Not only that, but neuroticism is generally thought to be central to the emotional impact of life experiences (Jeronimus, Riese, Sanderman, & Ormel, 2014). Beyond describing emotional stability, neuroticism can predict life experiences, based on the findings of Jeronimus, Riese, Sanderman, & Ormel (2014). This is significant when you consider that according to the personality research there is a general tendency among athletes, of lower levels of neuroticism, and thereby specifically higher emotional stability, than a normative sample (Allen, Greenlees, & Marc, 2011). This is repeated when you compare recreational and elite athletes, though with less certainty (Allen, Greenlees, & Marc, 2013). With the arguments by Browne (1989), that tilt is something all poker players experience. If the personality development we see among athletes is also

observed among poker players. Then players with higher neuroticism, might be more inclined to experience an emotionally negative experience such as tilt, based on the predictive power of neuroticism among a more general population.

12.2.1.1 Emotional stability in poker

Returning to the observation that lower neuroticism, and thereby higher emotional stability is found among higher level athletes, relative to lower level athletes, is something Palomäki, Laakasuo, Salmela (2012b) found support for, during their study. Palomäki, Laakasuo, Salmela (2012b) found in their research of tilt, that experience seemed to have a positive effect on the perception of the emotional process, described as tilt. They found that Finnish poker players reported more frequent tilt events, but the players' personal impression was that they had improved their coping abilities over time. That means we find some support for the correlations, between skills, experience and neuroticism that we see in traditional sports, among online poker players (Palomäki, Laakasuo, Salmela, 2012b).

Furthermore Palomäki, Laakasuo, Salmela (2012b), also questioned whether sensitivity to losses was correlated with the frequency and severity of tilt episodes. They found mediocre support for the correlation between sensitivity to losses, and tilt frequency, but a much stronger connection between the sensitivity to losses and severity of tilt episodes. It is important to note that the measurement Palomäki, Laakasuo, Salmela (2012b) used is not based on the five factor model, and therefore not directly comparable to the emotional stability described through a personality profile.

However, the same team later took a closer look at emotional stability itself, and found that experienced poker players were less emotional, and therefore more emotionally stable than their less experienced counterparts (Laakasuo, Palomäki, & Salmela, 2014). In tail with the findings of Palomäki, Laakasuo, Salmela (2012b) and Laakasuo, Palomäki, & Salmela (2014), did Griffiths, Parke, Wood, & Rigbye (2010) study predictive factors of gambling in online poker play, they found support for the differentiation among high level, and low level play, based on the fact that problem gambling could not be predicted by skill. That is even

though high level players generally spend a large amount of time playing, the skill they develop does not predict problem gambling, supporting the idea that higher level play, either requires or is supported by more emotional stability.

12.2.1.2 Emotional stability among athletes

We also see a similar description of emotional stability, as an important predictor of performance in athletics (Allen, Greenlees, & Marc, 2013). That is in relation to neuroticism, and the importance of being able to handle the emotional challenges that will occur in a high pressure, high performance environment. Supporting evidence has been continuously found afterwards, like Tamminen, & Crocker (2013) who studied the impact of emotional self-regulation among female high-performance curlers. They described the complexities within a team environment, and found emotional regulation to be a central aspect of performing at high level. A similar result was found in table tennis, which explored the importance of positive cognitive change strategies in performance, resulting in a positive relationship, and reversely a negative relationship, with the use of negative cognitive change (Kubiak, Rother, & Egloff, 2018). Allen, Greenlees, & Marc (2013) generally finds that emotional stability is correlated with positive results, and emotionally unstable individuals, have a harder time performing as athletes. Kaplánová (2018) also found similar results to those we see in relation to tilt. Kaplánová (2018) studied the sensitivity to injustice in tennis players, and found an increased emotional lability among players, with a low sensitivity to injustice, and reversely high emotional stability, if players showed low sensitivity to injustice. These results suggest a connection between injustice and emotional responses, a relationship, which Browne (1989) suggested, through his description of tilt being the results on the perception of unfair treatment by poker players. Similarly Palomäki, Laakasuo, Salmela (2012a) found that online poker players change their perception of luck, as they develop their play over time. Essentially Palomäki, Laakasuo, Salmela (2012b) suggests that the perception of luck, or bad beats (Browne, 1989; Rosenthal, 1995), impacts the risk of tilt, based on an appraisal of injustice towards the player.

12.2.2 Personality of poker players

An alternative way to infer the basic personality traits of poker players, is to take a closer look at indirect correlations. While the five factor model has not been applied to poker players generally, measurements of depression and anxiety have been measured in relation to research on problematic gambling (Hopley, & Nicki, 2010; Hopley, Dempsey, & Nicki, 2012; Barrault, & Varescon, 2013; Bonnaire, & Barrault, 2018). Hopley, & Nicki (2010) researched the predictive factors of excessive poker playing, and found connections to depression, anxiety and stress, as well as dissociation, boredom, and importantly time played, which might imply that skill and time spent is not equivalent, they repeated these findings in a follow-up study Hopley, Dempsey, & Nicki (2012). In this study they tried to assess each factor independently, finding depression as the best predictor, followed by time spent playing (Hopley, Dempsey, & Nicki, 2012). Barrault, & Varescon (2013) took a closer look at the relationships between depression, anxiety, & cognitive distortions among regular and pathological gambling players, in online poker. They found correlations between depression anxiety, cognitive distortions and pathological gamblers, while finding a lesser connection between problem gamblers, and non-pathological gamblers. Barrault was also part of a later study into sensation seeking among problem gamblers. This study was conducted by Bonnaire, & Barrault (2018), which also found higher levels of depression scores, as well as increased sensation seeking scores among problem online poker gamblers, relative to non-problem online poker gamblers. These findings suggest a lack of emotional stability, and therefore a possible increase in neuroticism among problem, and particularly pathological gamblers, which support the findings by Palomäki, Laakasuo, Salmela in tilt research, and the findings from Laakasuo, Palomäki, & Salmela (2014), when read in the context of research like Biolcati, Passini, & Griffiths (2015). Biolcati, Passini, & Griffiths (2015) found that professional, and high level poker players, did not show the traditional signs of gambling problems, mainly due to the intent behind their play. The professional poker players consider their play a job, and the main motivation behind playing

is to earn a living, unlike pathological gamblers, who play for escape or to deal with boredom (Biolcati, Passini, & Griffiths, 2015). These finds also support the work of Griffiths, Parke, Wood, & Rigbye (2010), which found similar results as mentioned earlier. Barrault, & Varescon (2016) studied the differences between online and offline poker, with a focus on sensation seeking, they found a similar profile between the two groups, with a relationship between sensation seeking, and poker interest, which supports the idea, that recreational poker players, have different motivations for playing, than their professional counterparts. The idea that the profiles we observe in relation to problematic gambling, can indicate a higher level of neuroticism among poker players who are problematic gamblers, is supported in the general understanding of the relationship between personality, and psychiatric disorders, such as increased risk of comorbidity (Khan, Jacobson, Gardner, Prescott, & Kendler, 2005), substance use, anxiety and depression (Kotov, Gámez, Schmidt, & Watson, 2010), as well as elevated reactivity to stressors and as previously mentioned increased frequency of negative life experiences (Norris, Larsen & Cacioppo, 2007; Jeronimus, Riese, Sanderman, & Ormel, 2014). The connection between neuroticism and the emotional process we describe as tilt, is therefore implied by the general research on the subject of poker players, and gambling behavior in poker. This connection is relevant, as it results in a basic hypothesis, that can be tested, and if found correct, then we might have a more solid foundation for predicting and understanding the people who are in risk of ending up with gambling issues.

12.2.3 Extraversion and performance

Similar to the research on neuroticism, is higher extraversion generally associated with athletes, as a differentiator to non-athletes (Allen, Greenlees, & Marc, 2013). Extraversion is also a central factor in differing personalities among types of sports, that is higher extraversion is observed among team sport athletes, relative to individual sport athletes (Allen, Greenlees, & Marc, 2013). Individual sport athletes also showed higher levels of conscientiousness according to Allen, Greenlees, & Marc (2013). Another interesting aspect

of sport types, is the central importance of social relationships in sports, where agreeableness is related to performance among team sport athletes, it is unrelated among individually performing athletes (Allen, Greenlees, & Marc, 2013). Currently the best estimates we have of the personality of poker players, comes from a study by Brown, & Mitchell (2010), where they investigated personality based on playing styles in poker. This study found that a majority of the players scored significantly lower on extraversion, than the average population score, and therefore suggested there might be a larger group of more introverted people, in the poker playing population.

12.2.4 Aggression and tilt

Another aspect of personality, which can be observed during tilt experiences, is aggression. In the context of sport psychology, aggression is defined as "*any overt act (verbal or physical) that has the capacity to cause psychological or physical injury to another*" (Luiselli, & Reed, 2011). This definition lets us draw comparisons to the behavior descriptions we find in the tilt literature, specifically Browne (1989) and Barrault, Untas, & Varescon (2014). Browne (1989) describes a certain type of tilt situation, which is instigated by a player, with the sole purpose of bringing his/her opponents on tilt. These types of strategies are usually carried out by verbal attacks on an opponent's level of play as described by Browne (1989). Reversely Barrault, Untas, & Varescon (2014) found experiences of aggression, as a result of tilt through their interviews, with descriptions such as "*For me, it results in nervousness, either by screaming or, like more recently, breaking a chair by hitting it on the ground.*", these actions might not be directed at another person, but certainly has the potential to injure others. Both of these studies suggest a relation between aggression and tilt, which would seem to be supported in personality theory. Allen, Greenlees, & Marc (2013) describes aggression as being more prone, by people who have low levels of agreeableness, extraversion and/or emotional stability. Similarly these factors were also related to the use of avoidance coping in athletes (Allen, Greenlees, & Marc, 2011).

12.2.5 Remaining correlations

We have described the major points that relate the five factor model, to the emotional process we know as tilt, the remaining three factors (agreeableness, conscientiousness and openness to new experience) are mainly related to maturity, and team sports, when discussed in context of athletic and sports performance, whereas they are less or not related to performance in individually focused sports. The main example is as mentioned earlier, that agreeableness has no relation to performance, if the sport is individually based, whereas it is central to performance, from various perspectives, if you are considering team based sports (Allen, Greenlees, & Marc, 2013). The major exception is the higher conscientiousness scores, among individual sport athletes, relative to athletes who practice team sports.

13. Appraisal and Performance psychology into tilt

In the segments above we have accounted for appraisal theory, as well as a theoretical perspective on personality, in connection to performance and tilt. In the following segment, we will take these descriptions of the theoretical perspectives provided, and combine them, in order to apply our complete theoretical framework of the nuanced understanding of tilt that we look to provide. The aim of doing so is to apply this nuanced understanding to find relevant and effective intervention approaches that can counteract the negative coping tendencies and emotions that build up through the tilt process.

13.1 Use of appraisal theory in sport

Uphill, & Dray (2009) suggested the use of appraisal theory in sports, as an effective way for athletes to deal with competition losses, through reappraisal. They emphasize the importance of counteracting rumination as a result of loss, and propose that appraisal theory, described by Lazarus (1999), could be a useful intervention to understand and assist

the metacognitive process. A meta analysis of coping and appraisal in youth sports, revealed support for this perspective. They found that Lazarus' theory is applicable and the process that is observed, among these youth athletes, is consistent with the theoretical portrayal of appraisal theory (Tamminen, & Holt, 2010). Martinent, & Ferrand (2015) researched the use of appraisal theory in the context of higher level athletes in competition. They found support for the use of appraisal theory in this context, by showing how athletes used primary and secondary appraisals during competition. Didymus, & Fletcher (2017) studied the use of appraisal techniques in field hockey, and found a correlation between performance satisfaction, and the appraisal experience. The correlation was observed when the athletes had perceived a stressor as a challenge, and employed a problem-focused style of coping (Didymus, & Fletcher, 2017). In a similar vein did Doron, & Martient (2017) find positive relationships between *challenge appraisals* and performance, in the context of competitive fencing.

There is consistent support for the application of appraisal theory during competition, in a variety of different types of sport. Similarly we find support for the usage of appraisal theory on a longer timescale, as the following articles show support for its use, in reappraising upcoming competitions.

13.1.1 Appraisal theory applied precompetition

Wolf, Evans, Laborde, & Kleinert (2015) created and validated a scale for the measurement of precompetition appraisal, based on the idea that appraisal of an upcoming competition, can have significant impact on an athletes performance during the competition. They used this measurement to show that most athletes will appraise an upcoming competition as a challenge. Thereby also showing that some athletes might appraise it, as a threat, in which case a reappraisal could be implemented to sustain or improve performance. Nicholls, Levy, Carson, Thompson, & Perry (2016) found further support for the importance of precompetitive appraisals. They researched appraisal in relation to goal setting, particularly readjusting one's goal based on the capacities of the individual athlete. Using appraisal

theory they describe the relationship between adjustment capacity and well-being among athletes, based on the use of reappraisal, when a goal becomes unachievable (Nicholls, Levy, Carson, Thompson, & Perry, 2016). They learned that a positive reappraisal of one's goals had a positive impact on future competitions. This is further supported by Litwic-Kaminska (2020) who found that athletes' interpretation of competition varied. Athletes with a positive appraisal of a competition were more frequently undertaking actions to reach their goals, implying higher motivations. Litwic-Kaminska (2020) suggested a closer look at this relationship, as reappraisal of competition, might improve motivations among athletes.

13.1.2 Appraisal, personality and performance

A final example of the research into appraisal theories application in athlete performance, is Fletcher, & Sarkar (2012)'s study of the psychological resilience in Olympic champions. They explored the relationship between performance and psychological resilience. They found a consistent understanding among the athletes that their psychological resilience was significant to handle the stressors imposed on them, as they competed. These stressors were often handled through *challenge appraisals*, a meta-cognitive process, whereby the appraisal process as described by Lazarus (1999) is used to consider a stressor a challenge, instead of a problem. This study is applying the same theoretical approach as this dissertation, with the usage of the five factor model to underline differences among athlete's personalities, to the advantage of applying a metacognitive approach based on the principles laid out by Lazarus and appraisal theory. Fletcher, & Sarkar (2012) grants support, not only for the usage of appraisal theory in athletic performance, but also for the implementation of personality, as a descriptive model, before applying a metacognitive approach.

The conclusion of the segments above is a consistent view in favor of appraisal theory's use in competitive environments, by showing its possible effects among reappraising athletes' perception of their losses, as well as upcoming stressors. These findings all suggest appraisal theory as an effective tool regarding the positive appraisals, and how to further improve performance of athletes. However, an aspect that is evident is that negative

appraisals and which implications negative appraisals might have, has not been discussed in similar depth. We aim to expand on this by exploring tilt as a potential outcome of negative appraisals.

13.2 Coping

Another aspect of the theoretical framework is coping, which will be elaborated upon in the following segments. The literature at hand, both the cornerstone articles (Browne, 1989) and the articles in the review (Palomäki, Salmela, Laakasuo, 2012a, 2012b; Moreau, Delieuvin, Chabrol, & Chauchard, 2017; Moreau, Chauchard, Sévigny, Giroux, 2020; Moreau, Sévigny, Giroux, Chauchard, 2020), describe the second phase of the tilt process as the phase in which the individual is tasked with coping with the emotions with a negative impact induced through the first phase (See chapter 6).

Through the current dissertation it has been clarified that this is also the case for the second appraisal phase, when looking at appraisal theory (Lazarus, 1991a, 1991b, 1999; Lazarus, & Folkman, 1984). Appraisal theory introduces *Problem focused coping* and *Emotional focused coping* as coping styles that take place during the second appraisal. On top of that, the five factor model argues that individuals with different personalities cope differently, and introduces *Problem focused coping*, *Emotion focused coping* and *Avoidance coping.* Two of these coping styles have been discussed between appraisal theory and the tilt process, however, applying a theoretical perspective on personality will allow us to implement a further understanding of how individuals cope with the tilt process, as well as introduce avoidance coping as a topic when looking at tilt.

13.2.1 Problem and emotion focused coping

Problem focused coping and Emotion focused coping are directly described and defined in both theoretical perspectives applied to nuance the understanding of the tilt process, highlighting the significance of the coping style for players. This means that the theories

applied allow a deeper understanding of the emotional and personality based mechanisms that have implications on players coping strategies. Individuals who are more inclined to use problem focused coping tend to have higher levels of extraversion and conscientiousness (Allen, Greenlees, & Jones, 2011). Individuals who have higher levels of neuroticism are more inclined to use either emotion focused coping or avoidance coping. Knowing the individual personality types coping tendencies can simplify the intervention process, if there are coping style specific interventions to utilize.

13.2.1.1 Problem focused coping

The first coping style we will look at is problem focused coping. Allen, Greenlees and Jones (2011) describe problem focused coping as a coping strategy that is *" … directed towards resolving the problem itself … "*. They provide examples of how a player might attempt to do this; *"such as expending more effort, seeking support, and reanalysing past experiences"*. Lazarus (1991b) describes problem focused gambling as, *" … coping often involves planful actions to change the actual person-environment relationship by directly acting on the environment or on oneself"*. Looking at these definitions of problem focused coping, it becomes evident that a problem has occured in the situation the individual is presented with, and they must attempt to alter the current predicted outcome. This theoretical understanding supports the understanding derived from the tilt process, in which the individuals are tasked with coping in the second phase. They experience a tilt inducing situation and, through problem focused coping, attempt to change the scenario. An example of this can be seen in an article by Griffiths, Parke and Wood (2010). They found that players who are more inclined to have financial success were more disciplined in regards to overspending on their gambling budget. This can be understood as players who are more successful, use limits on their spending as a problem focused coping strategy. They make sure not to enter a problem gambling scenario through financial discipline.

13.2.1.2 Emotion focused coping

The next coping style we will look at is Emotion focused coping. Allen, Greenlees and Jones (2011) describe emotional coping as, *"… coping by ventilating, managing, or palliating emotions"*. Beyond that, Lazarus (1991b) describes emotion focused coping as, *" … changing the meaning of the relationship …"*. These two descriptions create an understanding of emotion focused coping as a coping style centered around creating a more tolerable situation. Lazarus (1991b) also provides examples as to how an individual might utilize emotion focused coping, *"... for example, by denial or distancing, in which the distressing emotion associated with harm or threat is made moot"*. Together these definitions describe how an individual might react if the meaning of a relationship has transformed into a negative impact. Looking at these understandings of emotion focused coping is congruent with the understanding of emotional coping described within the tilt process. Emotional coping within the tilt process is described as emotion work (Browne, 1989). There are two types of emotion work described, *"Evocation"* when a desired emotion is absent, and *"Suppression"* when an undesired emotion is present (Hochschild, 1979). In Browne (1989), consistent winners are described as individuals who are successful in using emotion work to get off tilt. These players still experience tilt, and yet while the frequency is higher, the severity and longevity of the tilt is drastically lower than in consistent losers. This means that consistent winners play poorly, or are tilted, for a few hands in poker, compared to hours, weeks or months (Browne, 1989).

13.2.1.3 Avoidance coping

The final coping style described is Avoidance coping. It is only through the performance and personality psychological perspectives that avoidance coping is directly mentioned. Allen, Greenlees and Jones (2011) describe the act of leaving the situation instead of coping with the problem or the emotions induced. In the context of online poker, this can be done by leaving the table and not playing more hands. This can be seen as a positive coping

strategy, as it allows the individual to avoid escalating the issue and not spiral out of control financially, thereby avoiding the risks of problematic gambling.

While avoidance coping is not directly mentioned by Lazarus in appraisal theory, he mentions that an individual can deploy their attention, and thereby avoid coping with the emotions (Lazarus, 1991b). A similar result of removing one self from the tilt process is achieved through *dissociation*. This, however, is an involuntary loss of control that risks leaving the individual in a tilted state.

13.2.2 Dissociation

In Browne (1989) the dissociative state is described as a phase where an individual loses contact with themselves or their emotions, creates a desire to alter one's identity and potentially memory blackouts. The dissociative phase, as described in the current dissertation, acts as a prelude to the negative outcome of appraisals, in which tilt is experienced by the individual. Given the dissociative phases relation to the tilt process, and thereby the tilt situation, we argue that this could be a case of Peritraumatic Dissociation. The definition we will utilize of peritraumatic dissociation is taken from Kumpula, Orcutt, Bardeen and Varkovitzky (2011). The article describes that a dissociative must be experienced during or shortly after a traumatic event. Furthermore, they argue that peritraumatic dissociation may be experienced by individuals in the context of *"intense traumatic distress (fear, helplessness or horror ...)"*. This description and the examples of traumatic distress taken from Kumpula, Orcutt, Bardeen and Varkovitzky (2011) can be understood in the tilt process as a reaction to failing both problem and emotion focused coping. This thought is in line with the description of dissociation as a response to trauma (Palomäki, Laakasuo, & Salmela, 2013). Given the nature of the negative emotions in the dissociative phase, and tilt's description of not coping with the ensuing emotional problems, we argue, intrasubjectivly, that tilt could be seen as a coping strategy within avoidance coping. This coincides with the thought that dissociation can act as an avoidance strategy, presented by Foa and Hearst-Ikeda (1996).

13.2.2.1 Tilt as an avoidance coping strategy

Looking at tilt as an avoidance coping strategy has not been done in the literature at hand. This is an intrasubjective argument that we aim to provide theoretical support for, utilizing the theories described above.

We argue that tilt is a coping strategy that minimizes the encounters with alternate coping strategies that have failed. Looking at the description of tilt provided earlier in the current dissertation, we see that three types of coping styles have been described as present and relevant in coping with tilt. When the problem focused coping and the emotion focused coping fail, or if the individual perceives the situation as one that they are unable to cope with. We argue that tilt can be seen as an avoidance strategy, in that, through the dissociation state, the individual loses a sense of themselves and the situation they find themselves in. This can be seen as a protection of the individual, where they remove the need to cope with the situation at hand, and have the chance to leave it all together. However, should the individual not leave the situation, and either focus on the continuous threats in the situation, or fail to realise they are in a tilted state, they risk escalating the tilt, and spiralling out of control. Therefore we, intrasubjectively, argue that tilt is a maladaptive coping strategy, based on avoiding the problematic encounters with difficult or failed coping.

13.2.2.2 Dissociation and reappraisal

Beyond that, we look at reappraisal, the final phase of appraisal theory. Should the individual fail to cope and avoid the fallout of this situation through a dissociative state, they risk losing out on the chance to learn from their mistakes or through others' superior gamesmanship. Without the reappraisal players might end up in a continuous spiral of negative thoughts, described by Browne (1989) as prolonged tilt. This thought pattern might increase the players risk of having future tilt episodes, which as stated earlier, can be related to an increased risk of problematic gambling. In the following segments we will argue an intervention approach, both at a theoretical level, and a specific intervention that may allow individuals to avoid this reaction that has been described.

14. Intervention approach

The aim of the current dissertation has been to apply theoretical perspectives to nuance the understanding of tilt, in order to create a framework that allows a better understanding of tilt across different scenarios. With this nuanced understanding of tilt, we also gain the opportunity to implement an intervention that we deem relevant and effective at a theoretical level. In the following segment, we will describe how interventions might help individuals counteract the implications of tilt, as well as suggest a specific intervention is relevant to the context. We will describe, at a theoretical level, which intervention approaches might be relevant to apply.

Initially we wanted to highlight the importance of interventions that could aid the individuals who experience tilt, which Browne (1989) describes as being all poker players. However, we found nothing. Therefore we asked ourselves the question of why there does not seem to be literature about interventions regarding tilt. We found and reviewed articles that describe tilt and the implications it can have on the individuals that experience it. Throughout our review, the literature describes correlations between tilt, mental health issues and problematic gambling, yet no intervention has been portrayed to minimize this risk. This was a motivation for us to increase the possibility of counteracting tilt as a phenomenon.

As described in Moreau, Delieuvin, Chabrol, & Chauchard (2017), tilt is a phenomenon that has implications on decision making. This means that there are cognitive factors and thought processes that deviate from the individuals norm, due to tilt. With this understanding, we looked for intervention approaches that would help the individual A) Catch these deviations B) Impact the thought processes that impact these decisions and attention. We found that a metacognitive approach would help the individuals better understand their thought processes and the impact it has on their decision making.

14.1 S-REF and CAS a metacognitive perspective

We found a model called Self-Regulatory Executive Function model (S-REF). This model describes the underlying cognitive processes that have implications on the thought processes in individuals who experience anxiety, depression or PTSD (Nordahl, Hjemdal, Hagen, Nordahl, & Wells, 2019). It focuses on common psychological factors in order to be transdiagnostic, why we argue it can also be used to describe the tilt process. This is relevant due to previously mentioned description of tilt affecting all poker players, making tilt a broadly experienced phenomenon, making for a broad set of diagnostic criteria. Beyond that, S-REF describes that control of attention is affected by coping strategies, appraisal of external demands, metacognitions of mental function, self-relevant knowledge in long-term memory, as well as self-focused areas of attention (Wells, & Matthews, 1994).

Cognitive Attentional Syndrome (CAS) is a description of the transdiagnostic factors, which S-REF tries to resolve (Wells, 2009; Nordahl, Hjemdal, Hagen, Nordahl, & Wells, 2019). The thinking patterns of CAS, are excessive conceptual processes, observed through rumination and worry in the individual. On top of this is an attentional component, composed of a fixation on threat-related stimuli, this type of attention is called threat-monitoring (Wells, 2009).

Intrasubjectivly, we see this description of CAS as being congruent with the description of the tilt process. This is due to players experiencing excessive negative thoughts and therefore remaining in a tilted state for a sustained period of time, which can last for months (Browne, 1989). This strengthens the argument for S-REF, as it is congruent with the second phase of the tilt process and appraisal theory (See chapter 11.1.2). We see S-REF as a model that functions within the metacognitive approach, and thereby adds an additional theoretical perspective to the description of the tilt process. It describes the process of altering attention, creating a sense of coping. If an individual's attention is focused on threats and external demands rather than the situation at hand, the situation risks escalating. By utilizing S-REF, and a metacognitive approach in general, we seek to be able counteract this

misplacement of attention, by providing tools to cope with negative thoughts, thought patterns and emotions. The metacognitive approach aims to alter negative thought processes by providing tools to alter the relative impact of negative thoughts and emotions (Wells, 2009). Intrasubjectively we argue that this is applicable to the tilt process due to the nature of the escalation of tilt. Tilt is a phenomenon that builds on negative appraisals of the tilt situation and coping potential of said situation. Should an individual have tools to handle negative appraisals, they are more likely to overcome the tilt situation, minimizing the negative impact on performance tilt can have.

14.1.1 Metacognitive application in sports

The idea of applying metacognitive approaches to sports performance, is neither new (Dail, 2014) nor untested even though it is underused according to MacIntyre, Igou, Campbell, Moran, & Matthews (2014). They propose metacognition as a possible solution, to some of the problems you meet in the high performance environment of sport. They argue a specific example, which would be the use of metacognitive strategies to control anxiety in sports, something which has been researched in relation to choking (Beilock, 2010). The metacognitive ability to be aware of your thoughts, and constructively handle approaching anxiety is according to MacIntyre, Igou, Campbell, Moran, & Matthews (2014) continuously shown to be effective.

Metacognition approaches have similarly been shown to positively influence coping in tennis (Theodosiuo, Mavvidis, & Tsigilis, 2018). The study researched the association between avoidance coping and metacognition, by measuring the amount of metacognitive thinking was done during training, and relating that to the players preferential coping styles during competition (Theodosiuo, Mavvidis, & Tsigilis, 2018). Metacognition was shown to reduce the level of avoidance coping, thereby improving the performance of the individual players (Theodosiuo, Mavvidis, & Tsigilis, 2018).

An alternative perspective has been researched by Toering, Elferink-Gemser, Jordet, & Visscher (2009), who studied self-regulation among elite and non-elite youth soccer players,

and found a relationship between the players soccer ability and their scores on a survey monitoring, self-regulation through metacognitive processes. Jonker, Elferink-Gemser, & Visscher (2010) found further support for the importance of self-regulation, as a differentiator between higher and lower level athletes. This study specifically looked at reflection as a central part of the self-regulating process, and found that it distinguishes between players of different abilities. The findings of these studies suggest that the ability to self-regulate is an essential skill set for individuals who seek to become elite athletes, emphasising the role of self-regulation in enhancing performance. Wierike, Huijgen, Jonker, Elferink-Gemser, & Visscher (2018) found further support for the importance of self-regulatory skills among elite basketball players, specifically the development of reflection as the most important self-regulatory skill, in relation to their ability to control a ball. An alternative perspective was found by Gilson, Heller, & Stults-Kolehmainen (2013), during their research on self-regulatory efficacy, based on goal setting. They found that improved self-regulatory efficacy could be found among those athletes who practiced effort goals, and therefore continuously applied a metacognitive process to their training. This is all supported by Robbins, & Madrigal (2017), who emphasize the importance of metacognition via self talk. These studies show us the possibility that metacognitive strategies can be implemented with success among poker players, as it has been successfully implemented in traditional sports.

An alternative perspective comes from another study. Sluis, et al. (2019) suggested through their research that a metacognitive approach to self-regulatory skills, could be used as a prevention method, for overuse injuries. Specifically improving self monitoring could be a way to help players prevent injuries, which is a similar way you might possibly use metacognitive interventions to improve the self monitoring abilities of poker players, to improve their ability to intervene in the tilt process.

The entire idea, that metacognitive intervention might be effective in coping with the tilt process, is supported through all these peripheral studies. This idea of moving metacognitive strategies to a new context, is not new. Church, Rumbold, & Sandars (2017) suggested in their work, that one should study the use of metacognitive approaches in sport, to derive

strategies for improving performance among medical students, our intrasubjective idea is similar, if metacognitive approaches can improve and possibly prevent issues in traditional sports, then it might be effective in the context of poker, where such an intervention is surely needed.

14.2 Think Aloud

In the segments above we have described how we, theoretically, aim to affect an individual's performance using a metacognitive approach. In the following segment, we will aim to answer the other point that was highlighted in the start of chapter 14; A) Catch these deviations. The intervention chosen to do this will help the individuals catch deviations in order to improve on their cognition in the midst of a performance situation. However, in order for us to do this, we require an understanding of the underlying thought processes that the individual experiences while performing. We settled on the intervention protocol called: Think Aloud (TA).

We found that TA is a relevant intervention method due to its use in the sports psychological world. As an intervention, it has been applied to individuals in sports like tennis, cycling and golf (Oliver, McCarthy, & Burns, 2020; Whitehead et al., 2018; Whitehead, Taylor, & Polman, 2015; Birch, & Whitehead, 2019). These sports have a major individualization of performance, why the individual is able to use TA in order to catch their personal deviations in cognition, and use this knowledge to improve personal performance.

TA is a protocol where an individual records verbalization of thoughts, allowing them to listen back on their thoughts in the midst of a performance situation. This is relevant due to the accessibility of the individual's short term memory (Birch, & Whitehead, 2019). Some of the original thoughts that the individual faces during the performance situation may not be stored in the long term memory, thereby denying the individual access to these thoughts retrospectively (Birch, & Whitehead, 2019). Beyond this, TA works within the metacognitive

approach due to the interventions aim of altering thought processes and refocus the attention of the individual (Oliver, McCarthy, & Burns, 2020).

This is done by using verbalizations of thoughts to catch deviations in thought processes, and how they affected performance. Verbalizations can vary in depth. In order to describe these varying levels of depth, we see that, in 1993, Ericsson and Simon described TA with 3 levels (Birch, & Whitehead, 2019):

Level 1: Simple vocalizations of inner speech in which the individual makes no effort to communicate his or her thoughts

Level 2: Verbal encoding and vocalization of an internal mental representation that was not originally verbally coded and conveys only the information that is in the participants focus

Level 3: Explanations of the individual's thoughts, ideas, hypotheses, or motives

These levels all provide data in the form of vocalizations that represent the thought processes of the individual. However, most researchers that utilize the TA protocol aim for a level 2 representation of TA (Birch, & Whitehead, 2019). This is the case because level 2 TA allows for a deeper representation of the individual's ongoing cognition. Level 1 would provide less data and level 3 would interfere with the cognition of the individual.

Given the theoretically nuanced understanding of tilt that the current dissertation works with, along with the metacognitive approach to intervention, we intrasubjectively argue that TA would be a relevant and effective intervention approach against tilt. In the context of online poker players, the player would have the opportunity to record themselves playing, vocalize their thoughts about the decision making process they are experiencing, and listen back on it. Doing so would allow the players a new perspective to view their own gamesmanship and performance. This would allow them to reflect on how their thought processes and gamesmanship are intertwined, and, possibly, how to improve their gamesmanship through alterations to their cognition.

This would also work with Browne (1989) and his emotion work, which he describes as an essential skillset for players aiming to improve their overall gamesmanship. Looking at this perspective of the tilt process, TA would allow players a chance to observe their emotional

reactions, and thereby influence work on how their reactions interfere with their overall gamesmanship and cognition.

15. Conclusion

This segment will tie together the points made throughout the entirety of the current dissertation. Initially we will describe what our study goals (See chapter 1.2) achieved through the dissertation. Furthermore we will answer our research question:

When deriving characterizations of tilt from the current body of evidence, which

psychological theory/theories describe a suitable intervention approach?

15.1 Conclusion regarding study goals

Looking at the study goals that have been repeated through the dissertation will be our first step in concluding the current dissertation. Our goal was to theoretically nuance the understanding of tilt in order to describe a relevant and effective intervention approach that would allow individuals to counteract the implications of tilt. We were able to derive characterizations from the relevant literature with a content analysis, which allowed us to gain insight into which theoretical perspectives were relevant to apply in the nuancing. Given that all of the literature highlighted emotions as a significant descriptor of tilt, emotion theory was necessary to apply. Beyond that, Behavior was mentioned in 4 articles, and loss/losing and control was mentioned in 3. Looking at these descriptors, we wanted to find a supplementary theoretical perspective that would allow us to look at these descriptors as a whole. Performance psychology was applied to theorize loss/losing and the relevance of control. Behavior drove us towards looking at more personality based descriptions of performance.

All of this led us to apply **appraisal theory** and the **five factor model** focused on performance, to the nuanced description of tilt. We looked at the personality traits in the five factor model to determine which areas of personality were most likely to be affected by tilt,

so that the findings of the current dissertation could act as a framework for implementation of an intervention. We aimed to encapsulate the term in theory, as we found that this had not been done before. Doing this would allow us to find a relevance in altering the cognition in individuals who experience tilt. In doing so, the individual would be able to refocus their attention from the problem at hand, or the emotions interfering with their performance, and away from negative thoughts and appraisals. Therefore we highlighted a metacognitive approach to interventions as a way that might be able to aid individuals learn how to counteract the implications of tilt. This led us to apply think aloud as an intervention that would allow individuals to catch their deviations in thought processes and performance. So, we would argue that we achieved our goal of nuancing the understanding of tilt.

15.2 Conclusion regarding research question

Our research question was also answered in the process of completing our study goals. We asked which theories would best describe a relevant and effective intervention. To this we found that **appraisal theory**, **five factor model focused on performance** and a **metacognitive approach to interventions** would best describe the areas where tilted individuals could use the intervention. With these three theoretical perspectives, we describe a framework that is able to look at emotions, personality traits and cognition in individuals who experience tilt. We found that the emotional state and thought processes were affected by tilt. Through our metacognitive approach to interventions, we have described a framework for how interventions can provide an insight into the cognition of the individual. This would thereby provide an opportunity to observe themselves in their performance situations, and work on the deviations in emotional state and thought processes that affect their performance.

Looking at the body of evidence in the current dissertation, we can assume that tilt is not a poker specific phenomenon. This means that the emotional reactions described as a result of the tilt process is one that affects individuals outside the population groups of the online

poker related studies that have been looked at in the current dissertation. With that in mind, tilt seems to be an underdeveloped area of research that could use more theoretical understanding in order to apply it to other situations than the poker scene.

When looking to expand on this underdeveloped area of research, we deem it necessary to research the phenomenon in an isolated manner. The current dissertation has looked at tilt as an isolated phenomenon that occurs in several scenarios. Doing this has allowed us to describe the phenomenon to a point that it had not been done through any of the prior literature. The current dissertation set out to create a theoretical framework that could be applied in contexts outside of poker, in situations where the emotional process were described, regardless of whether or not the term tilt was labeled on it. We feel that we have succeeded in theoretically nuancing the description of tilt, making this application of the framework possible. Beyond that, we assess that TA would also be a relevant and effective intervention.

Despite this, we must address the strength of our arguments. As described earlier in the dissertation (See chapter 8.5), our assessed our literature review and ensuing analysis as being low to moderate in strength. However, we have applied validated theoretical perspectives from varying descriptions that support our descriptions of tilt, and applied them to create the theoretically nuanced framework of tilt. We therefore assess the strength of our argumentation and final conclusion as being moderate.

16. Perspectivation

Our interest in tilt arose from being introduced to the phenomenon within the world of esports. Within this context, we see, and personally experience, players suffering from tilt in an everyday format. There are hundreds of millions of players interacting with the esports or gaming scene, where they risk entering a tilted state, with little to no help being provided in how to avoid or counteract it, at a theoretical level. This was a motivation for us to be able to

theoretically nuance the understanding of tilt as a process, thereby allowing individuals to better understand the process they experience.

However, despite this being our introduction to tilt, we elected not to focus on tilt in esports. This is due to the lack of literature describing tilt in esports. Initially, we applied our search parameters to finding tilt specific literature in esports. The searches we conducted were as following:

- Esports and tilt

- Esports and emotional control

- Esports and dissociation

- Esports, emotion and tilt

We found one article, Himmelstein, Liu, & Shapiro (2017), that described tilt as a relevant construct in a game called League of Legends. The study looked at mental skills among players within the game, finding that tilt and harassment are issues that a player must be able to deal with.

However, looking at the quality of this single article, we found that the article did not have a strong basis for creating a theoretical framework of tilt. This meant that we essentially had no articles that could aid us with our goals of theoretically nuancing tilt as a phenomenon. The article had a reference to Brownes article from 1989, which gave us a direction in which we could research tilt in poker. Our thought was that applying a broad theoretical perspective like performance psychology allows us to apply the framework of tilt to performance situations. In doing so, we look to broaden the impact of the theoretically nuanced description of tilt to more situations. Given that tilt in esports still has not been referenced in academic literature, but the phenomenon is widely regarded as a known problem for players, we feel this might be an area where this framework could be applied to help players improve their performance.

Performance psychology, and sports psychology in general, has found consistent tendencies among high performing athletes across multiple, varied arenas of competition. These tendencies could be applied to a context like esports, for the purpose of researching a new

environment, which is significant for a large portion of the world's population. Esport, like poker, has little to no performance psychological research within its context. Therefore it would seem sensible to apply the peripheral theory of performance to create hypotheses that can explain the problems in the context of esport.

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18. Appendix

Artikel overview

Quality of current synthesis

Principles of research quality

Frequency analyser

18.1 Search description

The current dissertation set out to theoretically nuance the understanding of tilt, in order to describe an intervention approach that could be relevant and effective against the implications of tilt. Given that we found that poker had a description of tilt, we used these articles to garner the current understanding of the phenomenon and its implications. We found articles that describe tilt as a phenomenon and the implications it has within the game. We used search words from the cornerstone article (Browne, 1989) on tilt to gather relevant previous literature that allowed us to conduct a literature review, in which we summarize the knowledge on tilt that has been previously described. The searches we made were as following:

- Tilt, Poker
- Tilt, Poker, Emotion
- Poker, Dissociation
- Poker, Emotional Control

The searches were conducted on two different search engines, Pubmed (28.10.20), a database centered around life science, and PsycINFO (29.10.20), a database for the social sciences. Using these two search engines, and their attached databases, we were able to

find literature that was related to our topic, as well as providing us with ample opportunity to introduce psychological theory to the topic, thereby nuancing the current understanding of the phenomenon and suggesting possible interventions.

By reading the articles found through our preliminary searches, we found the basis for the keywords listed above. However, applying a keyword like "Tilt", we got thousands of hits. Because of tilts application in engineering and medical care, as a mechanical term, most of these articles were deemed irrelevant, given their context. Add to this, that the generality of the terms "Dissociation" and "Emotion", the contextual understanding of the terms gave thousands of hits, without relevance to the current dissertations topic. Given those factors, we used poker as a continuous keyword. Our searches provided us with 44 articles. Furthermore, two additional articles were found through chain searching, done from the articles we found during the database searches.

18.2 Screening process

After we had conducted our searches, our aim was to narrow down the amount of articles based on relevance. The articles that were not deemed relevant to the topic were removed from the body of evidence. This meant that we had to take our 46 articles, and run them through a screening process.

In the following segment we will describe our screening process. In doing so, we will describe how we found the articles that we deemed relevant. We will also clarify the criteria for both inclusion and exclusion.

Figure 1: Flowchart of the screening process
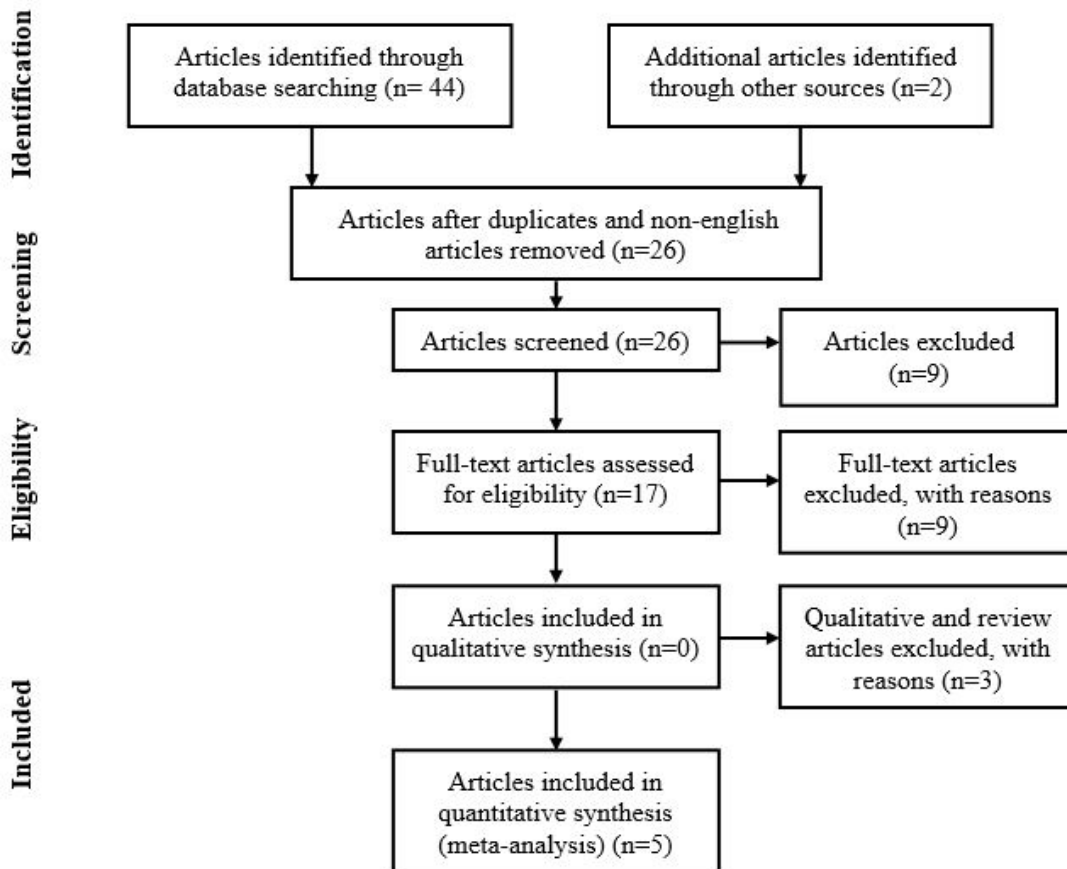
Prior to our screening process, we aimed to remove duplicates as well as an article written in French. This meant that we went from having 46 articles, to having 26. The majority of the articles removed were duplicates, and the French article was excluded due to language barriers. These exclusion criteria were implemented as a necessity, as we needed to be able to read the articles if we wanted to implement them in our review.

Next, our screening process began. We screened the abstracts and titles of the 26 included articles, in order to find relevance within. Doing so meant that we went from the 26 articles, to having 17. This meant that we had 9 articles that were deemed irrelevant to the topic at hand. These 9 articles were primarily excluded for having a different context, meaning that they did not include online poker, or did not describe tilt, dissociation or emotional control.

After this process, we aimed to narrow down the articles even further. We focused on articles that exclusively researched tilt, and the aspects that revolve around tilt. We did this by looking at the studies that the articles are based on. Looking at these, meant that we went from having 17 articles to having 8. The excluded articles were removed for individual reasons. They were removed because the context of their research did not relate directly to tilt, even if the topic of the study itself did. An example of this being that they described dissociation but in the context of gambling and/or alcoholism, rather than in the context of tilt situations.

In the final step in our screening process, we looked at the methodological approaches in the 8 articles that were deemed relevant. Doing so meant that we removed 3 articles that applied a qualitative or literature review approach to study tilt. The excluded articles, two qualitative articles and a systematic review, are still relevant to the subject of tilt, which is why they are used in the introduction, and explanation of the phenomenon. However they are not used in the literary review, and therefore not used to characterize tilt through the literary analysis.

This left us with a body of evidence, consisting of 5 articles that were all deemed relevant to our research question, based on their topic, the context of their research, as well as their methodological approach (Palomäki, Salmela, Laakasuo 2012a, 2012b; Moreau, Delieuvin, Chabrol, & Chauchard 2017; Moreau, Chauchard, Sévigny, Giroux 2020; Moreau, Sévigny, Giroux, Chauchard 2020). According to the strength of evidence approach, we have assembled a body of evidence for our synthesis, based on the consistent methodological research approach (DFID 2014; EFSA Scientific Committee, 2017).

Below we have listed our exclusion and inclusion criteria. This is done to clarify the criteria and which order they were applied through our screening process.

Exclusion Criteria

> Non english or danish literature
>
> Duplicates
>
> Not related to online poker

Not related to tilt as phenom in poker

Inclusion Criteria

Research in context of online poker

Written in english or danish

Researching tilt specifically

Researching tilt quantitatively

18.3 Body of evidence

This segment will address factors that partake in the determination of the strength of an article. The factors in this segment are common factors across the body of evidence, where factors specific to the lines of evidence will be addressed below, in the following segments. There are three factors that are best applied to the body of evidence rather than the lines of evidence. These factors are; Size, Context and Consistency.

The size of the body of evidence is small, with five articles constructing the entirety of the body. The body of evidence has been divided into two lines of evidence. There are two articles in the first line of evidence, and three in the second line. There is no limit to how small a body of evidence can be and still be valid, as it also depends on the strength of the individual articles that are found in the body of evidence (DFID, 2014). This means that, despite the body of evidence in the current dissertation, it is possible to create a strong and valid nuancing of tilt, based on the literature at hand. Additionally, the size of the body of evidence is small due to the lack of relevant articles discussing the topic.

The context of the body of evidence is very specific. We found articles revolving the topic of tilt within poker, and restricted the context further to online poker specifically. This means that we are examining an emotional process in a specific context, with a player base that has unique characteristics (Moreau, Sévigny, Giroux, Chauchard, 2020).

The body of evidence in the current dissertation is consistent. Through our content analysis, we found common descriptors that described tilt in a consistent fashion. The way tilt is

described in this body of evidence is also consistent with Browne's (1989) description of tilt in his article that laid the groundwork for understanding tilt as a phenomenon within poker. Both lines of evidence utilize an online survey to gather their information. This means that all the articles are a primary research type (DFID, 2014). They apply an observational design (DFID, 2014), which can limit the strength of the research, due to a lack of environmental control. Beyond that, the design has a limited control of the participants and lacking the possibility of control groups.

18.4 Methodical approach to content analysis

To start off our content analysis, we approached it based on Krippendorff (2013) ideals. According to Krippendorff (2013), six questions must be addressed in every content analysis:

1. *Which data is analyzed?*

    a. The data which are analyzed in this review are research articles that are included, based on the context of their research, specifically that they are researching tilt in the context of online poker.

2. *How is the data defined?*

    a. The data definition is based on the descriptions of tilt, by Browne (1989), and the categories, as explained by Krippendorff (2013), which related to the individual keywords. In practice this means that the keyword emotion work is defined by its category, and inferences from emotion can also be words like depression, anxiety and rumination.

3. *From what population is the data drawn?*

    a. The population of the studies that are reviewed in this dissertation, are separated into two major groups. A finish population group, and a population group, formed by french, and québécois participants. Both of these groups

show relatively homogenous information, in relation to their gender, education and age.

4. *What is the relevant context?*

    a. The relevant context of our content analysis is the research and understanding of tilt in online poker, with the final goal of suggesting possible interventions.

5. *What are the boundaries of the analysis?*

    a. The analysis is limited by the context of online poker, and the boundaries created by the limited amount of research on the topic.

6. *What is to be measured?*

    a. The content analysis is measuring the frequencies of words, related to the description of tilt, based on Browne (1989). These descriptions are reduced to keywords found through Browne's work, and the analysis is based on these words, and the categories related to them, as described by Krippendorff (2013).

After finalizing the questions, we decided upon using an *a priori* coding, as described by Weber (1990). *A priori* coding is based on previous theory, which in our case, meant that we could compare our findings to the literature, which has described tilt previously. This coding was based on the description of tilt, from Browne (1989). We wanted the keywords to be easily recognized, and therefore approached it through the resulting descriptions of their research on tilt. The list of our keywords that were found through the a priori coding: Emotion work, Loss of control, Dissociation, Deviation.

These keywords are simply used as guidance tools, for the actual word-frequency count, so we have a baseline to compare our results to. Following the keywords, we used the program NVivo 12, to analyse every article, by running a frequency count on the individual articles.

The frequency count was run with the setting stemmed words active, so that program included grammatically linked words, such as talk and talking, but without synonyms, such as study and survey, because we wanted to keep the context of the words relevant.

The results of this frequency count, was then compared to the keywords from our a priori coding, based on our data definition (Krippendorff, 2013) which we used to determine which words were relevant to the characterization of tilt, these are our descriptors.

18.5 Frequency Count of Palomäki, J., Laakasuo, M., & Salmela, M. (2012a)

Word	Length	Count	Weighted Percentage (%)	Similar Words
poker	5	124	003	poker
players	7	84	002	player, players, players'
hands	5	75	002	'hand', hand, handed, hands
self	4	62	001	self
playing	7	61	001	play, played, playing
starting	8	44	001	start, starting, starts
gambling	8	43	001	gambl, gamble, gambling
emotions	8	41	001	emotion, emotional, emotionally, emotions
decisions	9	39	001	decision, decisions
experience	10	39	001	experience, experiences
opponent	8	35	001	opponent, opponents
pes	3	32	001	pes
rumination	10	32	001	ruminate, rumination, ruminative
scenarios	9	30	001	scenario, scenarios
reflection	9	29	001	reflect, reflected, reflection, reflective, reflects
study	5	29	001	studied, studies, study
betting	7	28	001	bet, bets, betting
range	5	28	001	range
making	6	26	001	make, makes, making
calling	7	25	001	call, called, calling, calls
game	4	25	001	game, game', games, gaming
relation	8	25	001	relate, related, relates, relating, relation
scores	6	24	000	scores, scoring

skill	5	24	000	skill, skilled, skills
one	3	23	000	one, ones
raising	7	23	000	raise, raised, raises, raising
table	5	23	000	table, tables
associated	10	22	000	associated, association, associations
participation	13	22	000	participant, participants, participating, participation
see	3	22	000	see
experienced	11	21	000	experienced
luck	4	21	000	luck, luck''
negative	8	21	000	negative
line	4	20	000	line
measures	8	20	000	measure, measured, measurement, measures, measuring
two	3	20	000	two
fold	4	17	000	fold, fold'', folding
inexperienced	13	17	000	inexperienced
'less	5	17	000	'less, less
tilting	7	17	000	tilt, tilting
505	3	16	000	505
also	4	16	000	also
2011	4	15	000	2011
2013	4	15	000	2013
491	3	15	000	491
journal	7	15	000	journal
losses	6	15	000	loss, losses
stud	4	15	000	stud
assessed	8	14	000	assess, assessed, assessing, assessment
indicated	9	14	000	indicate, indicated, indicates, indicating

18.6 Frequency Count of Palomäki, J., Laakasuo, M., & Salmela, M. (2012b)

Word	Length	Count	Weighted Percentage (%)	Similar Words
poker	5	142	003	poker
tilting	7	130	003	tilt, tilted, tilted'', tilting
experience	10	78	002	experience
players	7	66	001	player, players, players'

losses	6	62		001	loss, losses
gambling	8	57		001	gambl, gamble, gambling
severity	8	50		001	several, severe, severely, severity
playing	7	41		001	play, played, playing
scale	5	37		001	scale, scales
items	5	36		001	item, items
emotions	8	35		001	emotion, emotional, emotions
sensitivity	11	35		001	sensitivity
measures	8	33		001	measurable, measure, measured, measurement, measures, measuring
effect	6	33		001	effect, effect'', effective, effectively, effects
pes	3	30		001	pes
study	5	29		001	studied, studies, study
losing	6	26		001	lose, losing
result	6	25		001	result, resulted, resulting, results
see	3	25		001	see
associated	10	24		001	associated, association, associations
experienced	11	24		001	experienced, experiencing
peet	4	24		001	peet
higher	6	23		001	higher
game	4	23		001	game, game'', games, gaming
model	5	23		001	model, models
001	3	22		000	001
2011	4	21		000	2011
also	4	21		000	also
presented	9	21		000	presentation, presented, presenting
perceived	9	20		000	perceivably, perceive, perceived
2010	4	19		000	2010
decisions	9	19		000	decision, decisions
feelings	8	19		000	feel, feelings, feels
accumulating	12	18		000	accumulate, accumulated, accumulating, accumulation
completely	10	18		000	complete, completely
fig	3	18		000	fig, figs
journal	7	17		000	journal
making	6	17		000	make, makes, making
behavior	8	17		000	behavior, behavioral, behaviors
negative	8	16		000	negative, negatively
200	3	15		000	200
assess	6	15		000	assess, assessed, assessing, assessment
coded	5	15		000	code, coded, coding
less	4	15		000	less
paloma	6	15		000	paloma

187	3	14	000	187
2012	4	14	000	2012
2014	4	14	000	2014
stud	4	14	000	stud
mediator	8	14	000	mediated, mediation, mediator

18.7 Frequency Count of Moreau, A., Delieuvin, J., Chabrol, H., & Chauchard, E. (2017)

Word	Length	Count	Weighted Percentage (%)	Similar Words
tilt	4	111	002	tilt, tilt', tilted, tilting
poker	5	106	002	poker
players	7	76	002	player, players, players'
gambling	8	68	001	gamble, gambled, gambling
online	6	55	001	online
scale	5	54	001	scale, scales
playing	7	47	001	play, played, playing, plays
problem	7	41	001	problem
studies	7	37	001	studies, study, studying
behavioural	11	37	001	behaviour, behavioural, behaviours
factors	7	37	001	factor, factors
items	5	36	001	item, items
moreau	6	30	001	moreau
opts	4	29	001	opts
emotional	9	28	001	emotion, emotional, emotionally, emotions, emotions'
control	7	27	001	control, controlling
2014	4	26	001	2014
001	3	25	001	001
measuring	9	25	001	measure, measured, measurement, measures, measuring
cognitive	9	23	000	cognition, cognitive
often	5	23	000	often
using	5	23	000	use, used, using
score	5	23	000	score, scores
doi	3	22	000	doi
episodes	8	22	000	episode, episodes
never	5	22	000	never, never'
research	8	21	000	research, researchers, researches
almost	6	20	000	almost
always	6	20	000	always
game	4	20	000	game, games, gaming
pgsi	4	20	000	pgsi

feel	4	19	000	feel, feeling, feelings, feels
frequency	9	19	000	frequencies, frequency
sometimes	9	19	000	sometimes
questionnaire	13	19	000	questionnaire, questionnaires
2012	4	18	000	2012
rarely	6	18	000	rarely
international	13	18	000	internal, international
2013	4	17	000	2013
table	5	17	000	table
addiction	9	16	000	addiction, addictions, addictive
process	7	16	000	process, processes
2015	4	16	000	2015
analysis	8	16	000	analysis
decisions	9	15	000	decision, decisions
des	3	15	000	des
dissociation	12	15	000	dissociation, dissociative
journal	7	15	000	journal
sample	6	15	000	sample, samples
severity	8	15	000	several, severity

18.8 Frequency Count of Moreau, A., Chauchard, É., Sévigny, S., Giroux, I. (2020)

Word	Length	Count	Weighted Percentage (%)	Similar Words
poker	5	124	002	poker
gambling	8	121	002	gambl, gamble, gambling
online	6	76	001	online
tilt	4	73	001	tilt, tilt', tilting
players	7	66	001	player, players, players'
problem	7	64	001	problem
crossref	8	46	001	crossref
study	5	41	001	studied, studies, study
impulsivity	11	40	001	impulse, impulsive, impulsiveness, impulsivity
cognitive	9	33	001	cognition, cognitions, cognitive, cognitives
depression	10	31	001	depression, depressive
scale	5	30	001	scale, scales
anxiety	7	30	001	anxiety
using	5	29	000	use, used, useful, using

score	5	27	000	score, scored, scores
control	7	27	000	control, controlled
2020	4	25	000	2020
episodes	8	25	000	episode, episodes
gamblers	8	25	000	gamblers, gamblers'
results	7	25	000	result, resulted, results
distortions	11	24	000	distorted, distortion, distortions
grcs	4	24	000	grcs
game	4	23	000	game, games, gaming
int	3	23	000	int
population	10	23	000	population
upps	4	23	000	upps
links	5	23	000	link, linked, links
frequency	9	22	000	frequency
variables	9	22	000	variable, variables
model	5	21	000	model, modeling
seeking	7	21	000	seek, seeking
sensation	9	21	000	sensation
significant	10	20	000	significant, significantly, significative, significatively
playing	7	20	000	play, played, playing
also	4	19	000	also
behavior	8	19	000	behavior, behavioral, behaviors
health	6	19	000	health
related	7	18	000	related, relating, relations, relative, relatively, relatives
mean	4	18	000	mean, means
correlations	12	18	000	correlated, correlates, correlation, correlations
loss	4	18	000	loss, losses
negative	8	18	000	negative
res	3	18	000	res
risk	4	18	000	risk
emotions	8	17	000	emotion, emotional, emotionally, emotions
urgency	7	17	000	urgency
environ	7	16	000	environ, environment, environments
public	6	16	000	public, publication
sample	6	16	000	sample
assess	6	15	000	assess, assessed, assesses, assessing, assessment

18.9 Frequency Count of Moreau, A., Sévigny, S., Giroux, I., Chauchard, E. (2020)

Word	Length	Count	Weighted Percentage (%)	Similar Words
tilt	4	118	003	tilt, tilt'', tilted, tilting
players	7	111	002	player, players, players', players''
gambling	8	87	002	gambling
poker	5	87	002	poker
online	6	64	001	online
study	5	56	001	studied, studies, study
2014	4	39	001	2014
group	5	38	001	group, groupe, groups
behavior	8	36	001	behavior, behavioral, behaviors
excessive	9	35	001	excessive
episodes	8	33	001	episode, episodes
scores	6	32	001	score, scores
frequency	9	31	001	frequencies, frequency
using	5	28	001	use, used, useful, using
doi	3	27	001	doi
https	5	27	001	https
org	3	27	001	org
journal	7	25	001	journal
measured	8	24	001	measure, measured, measurement, measures, measuring
scale	5	24	001	scale, scales
2015	4	23	000	2015
play	4	23	000	play, played, playing
anxiety	7	21	000	anxiety
depression	10	21	000	depression, depressive
emotions	8	20	000	emotion, emotional, emotionally, emotions
game	4	20	000	game, games, gaming
results	7	20	000	result, resulted, results
sample	6	20	000	sample
moreau	6	19	000	moreau
indicate	8	18	000	indicate, indicated, indicates, indicating, indicator, indicators
perceived	9	18	000	perceive, perceived
risk	4	18	000	risk
problem	7	17	000	problem, problems
different	9	17	000	difference, differences, different
control	7	15	000	control, control'', controlled
2018	4	15	000	2018
barrault	8	15	000	barrault

2017	4	14	000	2017
711	3	14	000	711
associated	10	14	000	associated, association
opts	4	14	000	opts
identifying	11	14	000	identified, identify, identifying
population	10	14	000	population, populations
2020	4	13	000	2020
699	3	13	000	699
eroukmanoff	11	13	000	eroukmanoff
ability	7	12	000	abilities, ability
level	5	12	000	level, levels
related	7	12	000	related, relates, relation, relatively, relatives
2012	4	12	000	2012