

TOWARDS A THEORY OF TRUE AND FALSE INTENTIONS

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*Dedicated to my parents, Anna and Peter, for their endless support  
and to Elaine for sharing this journey with me*



## ABSTRACT

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An ability to discriminate between statements of true and false intent is critical for many legal professionals. However, it is only in recent years that psycho-legal researchers have turned to this topic. The current thesis proposes a theoretical framework aimed to parsimoniously account for past research and to generate novel hypotheses in this burgeoning field of enquiry. In brief, it is proposed that the predictable consequences of active goals will be more pronounced for those with a true compared to a false intention. This is because the predictable consequences of goals aid in goal attainment and this function is lost on the empty goals of a false intention. Hypotheses derived from the theoretical framework were tested in three studies. **Study I** examined whether indicators of good planning behavior could provide novel cues to discriminate between true and false statements of intent. Truth tellers planned a neutral task, while liars planned a mock-crime. In interviews truth tellers honestly described their intentions, while liars provided a cover-story thematically similar to the truth tellers' task. The interviews were coded for markers of good planning behavior (e.g., effective time allocation). As predicted truth tellers' statements were colored to a higher degree than liars' by such markers. **Study II** examined the benefit of asking unanticipated questions when interviewing groups of suspects on repeated occasions. The experimental design was the same as that used in Study I. Participants were asked *anticipated questions* on their intentions, and *unanticipated questions* on the planning of their intentions. Truth tellers provided longer and more detailed answers than liars, and had higher levels of within-group consistency compared to liars. This was the case for answers to both anticipated and unanticipated questions. No differences between truth tellers and liars were found for between-statement consistency. The results highlight within-group consistency as an important cue to deceit. However, a number of limitations to the unanticipated questions approach were evident. **Study III** examined the prevalence and manifestation of spontaneous thoughts in relation to true and false intentions. Based on the finding that future tasks generate spontaneous thoughts, it was predicted that those with a true intention would experience task-related spontaneous thoughts to a greater extent than those with a false intention. As predicted, truth tellers reported experiencing task-related spontaneous thoughts to a greater extent than liars. However, these subjective differences did not manifest as discernable cues in interviews. By and large, the proposed theoretical framework received support from the empirical studies. With a specific focus on intentions and goals, the proposed framework makes a unique contribution to deception theory.

*Keywords:* deception, planning, spontaneous thought, true and false intentions, unanticipated questions

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## SWEDISH SUMMARY

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Människor kommunicerar ofta till varandra vad de avser att göra i framtiden. Ofta motsvarar dessa uttalanden en genuin avsikt att utföra den påstådda handlingen. Ibland syftar de dock till att vilseleda andra, t.ex. för att vinna andras förtroende och dölja andra avsikter. Rättspsykologisk forskning om intentioner bedrivs med målsättningen att bistå utredare med handfasta verktyg för att bättre särskilja sanna från falska utsagor om framtida beteenden. Den samhällseliga nyttan av sådan forskning är potentiellt mycket stor då en mängd olika situationer kräver bedömningar av sanningshalten i andras uttryckta intentioner. Det kanske mest utmärkande exemplet är när polis eller säkerhetspersonal frågar en misstänkt om dennes planerade handlingar (t.ex. i gränskontroller, terroristutredningar). Även aktörer inom andra yrken och situationer behöver dagligen göra den här typen av bedömningar. Detta inkluderar domare som tar beslut om villkorliga frigivningar, försäkringsförsäljare, och läkare som skriver ut recept (där en växande trend är vidareförsäljning av receptbelagda läkemedel).

Trots den tydliga samhällsnyttan har systematisk forskning på sanna och falska intentioner utförts i endast runt fem år. Ändå har över 20 artiklar och 5 avhandlingar redan hunnit publiceras på området. Den publicerade forskningen är märkbart spretig. Psykologi-forskare har närmast sig ämnet från ett flertal olika ingångar. Således bidrar denna avhandling till området genom att utveckla ett teoretiskt ramverk för att förena den tidigare forskningen.

Målet var att skapa en allmän approach som utgår från lögnens psykologi och specifikt riktas mot intentioner. Ramverket utgår ifrån teorin att en (sann) intention skapar ett aktivt mål och därmed ett målinriktat beteende. Psykologisk grundforskning visar att aktiva mål följs av förutsägbara konsekvenser vilka i sin tur påverkar en individs beteende. Dessa konsekvenser kan vara både avsiktliga (t.ex. aktiva mål stimulerar planering) och mer automatiska (t.ex. aktiva mål påverkar hur vi värderar objekt i vår miljö). Poängen är att dessa konsekvenser är funktionella. De hjälper individen att utföra sin intention för att nå sitt mål. De som däremot uttrycker en falsk intention skapar inte ett aktivt mål, åtminstone inte om det beteende som de bara påstår att de ska utföra. Den funktionella aspekten av de ovan nämnda konsekvenserna aktiveras därmed inte hos människor som uttrycker en falsk intention. Därför förväntas de typiska konsekvenserna av intentioner vara svagare hos de som ljugar om sin intention.

Utifrån avhandlingens teoretiska ramverk testades i tre studier två konsekvenser av intentionsskapande. De två första studierna fokuserade på planeringsfasen som föregår de flesta intentioner och den sista studien fokuserade på spontana tankar kring intentionen i motsats till mer resonerande tankar. Både planering och spontana tankar kan ses som konsekvenser av ett intentionsskapande som hjälper en människa att nå sina mål.

**Studie I** utfördes med syftet att identifiera nya ledtrådar för att särskilja mellan sanna och falska intentioner med fokus på planeringsfasen som föregår intentioner. Grundidén var att sanningsägare bör vara mer motiverade att planera sina sanna intentioner än vad lögnare är att planera sina falska intentioner (d.v.s. det de ämnar göra enligt sin cover story). Därför borde sanningsägarnas planering vara mer fullständig än lögnarnas, vilket skulle kunna resultera i skillnader i deras svar på frågor om deras planering under en intervju. Deltagarna ( $N = 132$ ) delades upp i en sann intentionsgrupp

(sanningssägare) och en falsk intentionsgrupp (lögnare). Sanningssägare och lögnare genomförde sedan studien i grupper om tre. Under samarbetet i grupperna planerade sanningssägarna en icke-kriminell handling (att ordna en typisk svensk lunch för två utbytesstudenter) medan lögnarna fick uppdraget att utföra ett iscensatt brott (att leverera och hämta olika föremål med fiktiv kriminell koppling). Lögnarna blev även informerade om att det fanns en risk att bli stoppade av säkerhetspersonal, och att om detta skulle ske behövde de ha en förberedd cover story. Cover storyn speglade strukturmässigt den uppgift som den sanna intentionsgruppen fick (att ordna en svensk lunch för två utbytestudenter). Med andra ord, den planerade lunchen var den falska intentionen för lögnarna och den sanna intentionen för sanningssägarna. Deltagarna fick planera sitt uppdrag i 20 minuter. Direkt efter planeringsfasen, men precis innan uppdraget skulle genomföras, blev deltagarna stoppade och intervjuades istället om deras intentioner. Sanningssägarnas och lögnarnas transkriberade intervjuer kodades för markörer av ett välplanerat beteende (t.ex. effektiv tidsallokering, sannolikheten att tala om potentiella problem, osv.). I linje med den uppställda hypotesen präglades sanningssägarnas uttalanden i högre grad än lögnarnas av markörer som indikerade ett välplanerat beteende.

**Studie II** fokuserade på huruvida oförutsedda frågor om planering – frågor som varken lögnare eller sanningssägare hade räknat med – kan användas i syfte att förbättra exempelvis polisens förmåga att särskilja mellan sanna och falska intentioner vid förhör. Den bakomliggande teorin är att graden av planering som ligger bakom en lögnares cover story är relativt begränsad. Därför ökar chansen för att lögnare upplevs som mindre trovärdiga när de får oförutsedda frågor om sin planering. Däremot, om en oförutsedd fråga ställs till en sanningssägare behöver personen endast förlita sig på sitt verkliga minne av planeringen, vilket bör resultera i att trovärdigheten står oförändrad. I studien intervjuades grupper av misstänkta vid upprepade tillfällen och under intervjuerna fick deltagarna förväntade frågor om deras intentioner och oförutsedda frågor om planeringen av deras intentioner. Fokus låg på att granska överensstämmelsen mellan individuella utsagor (i) inom gruppen och (ii) över tid. Studien bestod av två experiment. Deltagarna intervjuades en gång i Experiment 1 ( $N = 132$ ) och tre gånger i Experiment 2 ( $N = 123$ ). Underlaget för Experiment 1 utgjordes av data insamlade i samband med Studie I. Skillnaden var att sanningssägarnas och lögnarnas transkriberade intervjuer fokuserade på överensstämmelse mellan individuella utsagor istället för markörer av välplanerat beteende. Experiment 2 använde samma design som Experiment 1 förutom att varje deltagare intervjuades tre gånger. Resultaten visade att sanningssägarna gav längre, mer detaljerade och mer samstämmiga (inom gruppen) svar än lögnare på både de förväntade och de oförutsedda frågorna. Däremot visade det sig inte vara några skillnader mellan sanningssägarna och lögnarna vad gällde överensstämmelse mellan individuella utsagor över tid.

Utgångspunkt för **Studie III** var grundforskning som visar hur framtida uppgifter oftast leder till spontana tankar om ärendet. Eftersom personer med en falsk intention inte har ett genuint ärende, predicerade vi att dessa skulle ha färre spontana tankar om deras uttryckta intention jämfört med personer som har en sann intention. Studien bestod av tre experiment. Experiment 1 ( $N = 61$ ) bekräftade grundidén genom att visa att människor som skapar en sann intention rapporterade att de upplevde fler spontana tankar kring det framtida ärendet jämfört med människor som bara påstod att de ska utföra ärendet (de

med en falsk intention). Experiment 2 ( $N = 55$ ) utvecklade idén genom att undersöka om de självrapporterade skillnaderna i spontana tankar resulterade i mätbara skillnader vid en intervjusituation. Resultaten replikerade fynden från Experiment 1 med avseende till de självrapporterade måtten av spontana tankar. Däremot framkom inga skillnader mellan sanna och falska intentioner under intervjun. Experiment 3 ( $N = 100$ ) undersökte grundidén i en mer verklighetsförankrad situation. Halva gruppen i studien skulle i verkligheten åka på den utlandsresa de beskrev – resan var därmed deras sanna intention. Den andra halvan påstod falskeligen att de skulle iväg på en resa – resan var därmed deras falska intention. Deltagarna tillfrågades i en följande intervju om deras spontana tankar kring resan. Hypotesen var att frågorna om spontana tankar kring resan skulle vara mer svårbesvarade för lögnarna eftersom de troligtvis hade upplevt färre spontana tankar kring resan jämfört med sanningssägare (de som faktiskt skulle resa). Inga tydliga skillnader i någon av våra jämförelser hittades mellan lögnarnas och sanningssägarnas beskrivningar.

Sammantaget gav de tre studierna stöd för det teoretiska ramverk som avhandlingen avsåg att utveckla. Sanningssägare skapade bättre och mer detaljerade planer för att utföra sin uttryckta intention jämfört med lögnare. Sanningssägare upplevde också fler spontana tankar relaterat till deras uttryckta intention. Både planering och spontana tankar kan ses som funktionella konsekvenser av ett intentionsskapande. Enligt det förslagna ramverket var dessa konsekvenser svagare hos lögnare på grund av att de inte uppfyllde sitt funktionella syfte. Däremot resulterade dessa skillnader inte alltid i tydliga skillnader i en intervjusituation. Detta innebär att ytterligare forskning är nödvändig för att säkerställa konkreta råd för direkt tillämpning. Avhandlingens specifika fokus på teoretisk utveckling, vilket skiljer den från tidigare arbeten i fältet, ger dock ett unikt bidrag till den psykologiska lögnteorin.



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*Erik Mac Giolla*  
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## PREFACE

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This thesis is based on the following three studies, which are referred to by their Roman numerals:

- I. Mac Giolla, E., Granhag, P. A., & Liu-Jönsson, M. (2013). Markers of good planning behavior as a cue for separating true and false intent. *PsyCh Journal*, 2, 183-189. doi: 10.1002/pchj.36.
- II. Mac Giolla, E., & Granhag, P. A. (2015). Detecting false intent amongst small cells of suspects: Single versus repeated interviews. *Journal of Investigative Psychology and Offender Profiling*, 12, 142-157. doi: 10.1002/jip.1419
- III. Mac Giolla, E., Granhag, P. A., & Ask, K. (in press). Task-related spontaneous thought: A novel direction in the study of true and false intentions. *Journal of Applied Research in Memory and Cognition*.





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## BACKGROUND

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Since 9/11 a renewed and fervent interest on crime prevention has emerged. A salient example comes from the ever increasing measures being taken at airport security checks (e.g. the introduction of full body scanners at a number of international airports; Milmo, 2010). Fundamental to crime prevention is an ability to ascertain the veracity of statements of intent. The psycho-legal study of true and false intentions aims to address this issue. It is however, only in recent years that researchers have turned to this topic—the majority of past research on deception detection has focused on true and false statements about past events (Vrij, 2008). In contrast, research on true and false intentions focuses on statements concerning future events. A statement of true intent refers to a future action which a speaker *intends* to carry out, while a statement of false intent refers to a future action which a speaker claims, but *does not* intend, to carry out.

The issue of true and false intent has received some attention in related fields, including economic theory (Crawford, 2003; Hendricks & McAfee, 2006), military studies (Daniel & Herbig, 1982), and even ethology (Bond & Robinson, 1988; Laidre, 2009; Moynihan, 1982). However, until recently no study had examined true and false intent from a legal psychological perspective (Granhag, 2010). A possible reason may be the philosophical problems that mar the topic when related to the legal context. Such issues are perhaps best typified by the musings of science fiction writers (e.g., Dick, 1956/2002; Orwell, 1949/1989) emphasizing the difficulties associated with penalizing a thought that is, as of yet, unaccompanied by an action.

Why then should legal-psychologists delve into this thorny issue? From a practical perspective, the most compelling answer is that many professionals need to make veracity judgments about others' intent irrespective of whether research is conducted or not. This includes customs officers, judges at parole hearings, security personnel, migration officers and intelligence officers. There are also occupations outside of law-enforcement situations that regularly require the assessment of people's intentions, such as insurance salesmen or even doctors prescribing medication. Without empirical research veracity judgements of statements of intent will at best be based on past experience and at worst on biased speculation. As an example, consider the airport security program Screening of Passengers by Observation Techniques (SPOT) initiated in 2007 by the American Transport Security Administration (TSA). The program maintained that malicious intent could be detected simply by observing passengers behavior. Despite criticism from prominent researchers highlighting a lack of empirical support (Weinberger, 2010), an external evaluation was not published until November 2013 (US Government Accountability Office, 2013). In brief, the evaluation concluded that the project, which had cost in excess of \$900 million, was ineffective in its aims and future funding should be prohibited.

From a theoretical perspective, it seems that methods applied to distinguish truths from lies about past actions need not apply to situations about future actions (Fenn, McGuire, Langben, & Blandón-Gitlin, 2015; Warmelink et al., 2011). Hence, these methods should also be examined with situations of intent. Research on true and false intentions can also provide unique opportunities in deception detection, not possible when

examining true and false statements about past events (Granhag & Mac Giolla, 2014). The current thesis focuses on these unique opportunities. Specifically, the goal of the current thesis is to put forth a theoretical framework which aims to: (1) account for the previously studied intention-specific approaches to deception; (2) generate new hypotheses to be tested in three separate studies, to be specified later; and, (3) generate new directions for future research.

The thesis begins by providing a brief overview of the most prominent deception theories. These theories are then examined in light of empirical research. Following this, recent developments in strategic interviewing methods to detect deception are highlighted. In the next section, a theoretical framework for true and false intentions is proposed. This section includes definitional issues of intent, a review of the extant research of true and false intentions, and the outlines of a theoretical framework. Hypotheses are generated from this framework, which are tested in three separate studies. The remainder of the thesis reports and discusses these studies in light of the proposed theoretical framework.

## Overview of Deception Theories

Vrij (2008, p. 15) defines a lie as “a successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue”. This definition means that lies can come in many different forms. They can be verbal or non-verbal (Bond & Robinson, 1988) and can range from outright fabrications to simply withholding the truth (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996). Lies can also occur in different situations—ranging in severity from low- to high-stakes (Ekman & Friesen, 1969)—and can be told for a multitude of reasons—from criminal and malicious lies to good intentioned white ones (Lindsay & Walters, 1983). Given the multifaceted nature of lying, it is not surprising that psychological research on deception abounds with different theoretical approaches. Theories of deception have come from emotional perspectives (Ekman, 1985) and cognitive perspectives (Vrij, 2015a), and have drawn on such disparate areas of research as self-presentation (DePaulo et al., 2003), self-regulation (Granhag & Hartwig, 2008) and persuasion (Stiff, 1995).

### Arousal, Emotions, and Non-Verbal Cues

From antiquity to modern times, arousal or emotional perspectives have dominated theories of deception (Kleinmuntz & Szucko, 1984; Trovillo, 1939). In its simplest form this position holds that lying is more arousing than truth telling. Hence, by measuring arousal one can infer whether someone is lying (Vrij, 2008). This reasoning is the corner stone of the modern polygraph, whose exponents propagate that by measuring arousal through skin-conductors and heart monitors deception can be uncovered (Lykken, 1998). The central idea of the polygraph differs little from lie detection methods used in ancient Greece or the Middle Ages, where it was also thought that increased arousal was indicative of deceit (Trovillo, 1939).

An alternative approach is to examine how emotions manifest as non-verbal behavior. This position rests on the assumption that non-verbal behaviors are indicators of our internal states. Therefore, if non-verbal behaviors deviate from what one would expect

based on the verbal behavior, this is suggestive of deceit (Vrij, 2008). The most influential exponents of this position are Paul Ekman and his colleagues (Ekman, Friesen, & Ancoli, 1980; Ekman & Friesen, 1969). Ekman (1985) outlines three specific emotions that are expected to accompany lying: guilt of engaging in a morally dubious act; anxiety for fear of getting caught; and, in some situations, delight in successfully deceiving another—*duper's delight*. Of course, just as liars alter their statements, it can be assumed that liars will also alter their non-verbal behavior in order to mask their genuine emotion. However, it is argued that liars' impression management will be limited. It is simply too much to control for all behaviors. As such, behaviors incongruent with liars' claimed emotions will leak out, leaving behavioral traces suggestive of their genuine emotion (Ekman, 1985). For example, a liar trying to mask her anxiety with a pleasant smile, may display signs of nervousness through other behaviors such as picking at her fingernails (Ekman & Friesen, 1969).

The strength and reliability of these cues are thought to vary depending on the body part producing the behavior (Ekman & Friesen, 1969). Inspired by Darwin (1852/2002), it is argued that some non-verbal behaviors are so habitually linked to internal states that they are difficult to feign and almost impossible to fully suppress. It follows that reliable cues to deceit stem from the body parts and behaviors that are most difficult to control (Ekman & Friesen, 1969). Ekman (1985) posits that verbal communication, as the most controllable, will be the least reliable source of cues to deceit. Body movements (specifically of the legs and feet), vocal aspects (e.g., pitch), and micro-expressions of the face, are claimed to be the most difficult to control and hence the most reliable sources of cues to deceit.

Other researchers have added to this general position by examining the influence of context. For instance, based on research on interpersonal communication, Interpersonal Deception Theory (IDT) seeks to examine when in a communicative interaction cues to deceit can be expected to be greater or weaker (Buller & Burgoon, 1996). For example, if the suspicion of receivers (those who judge the veracity of a statement) increases, IDT predicts the non-strategic (leaked) behaviors of senders (truth tellers or liars) will increase in turn. For honest senders, the leaked behaviors may manifest as cues of frustration for failing to be believed. For deceptive senders the leaked behaviors may manifest as greater anxiety, for fear of being detected (Buller & Burgoon, 1996).

### Cognitive Dimensions of Deceit

If an emotional approach can be seen as the first major pillar of deception theories, a cognitive approach can be seen as the second. A number of different approaches can be grouped into this second block, with the specific cues to deceit varying, depending on the approach. One position, with a long history in deception detection holds that lying is more cognitively demanding than truth telling (Zuckerman, DePaulo, & Rosenthal, 1981). It is argued that the task of recollection during truth telling is less taxing and more automatic than the task of lying, which consists in fabricating a logically consistent statement that does not contradict the receiver's knowledge. Hence, signs of cognitive effort (e.g., pupil dilation, response latencies, etc.) can be understood as indicators of deceit (Zuckerman et al., 1981). Subsequent cognitive models of deception

can be seen as updates or refinements of the general cognitive model described by Zuckerman et al.<sup>1</sup> These include Walczyk and colleagues' Activation-Decision-Construction Model (Walczyk, Roper, Seemann, & Humphrey, 2003; Walczyk et al., 2005) and Sporer and Schwandt's (2006, 2007) working memory model.

Content analytic approaches (for an overview see Vrij, 2015b) and linguistic approaches (for an overview see Hauch, Blandón-Gitlin, Masip, & Sporer, 2014), can also be included under the cognitive approach to deception (though it should be noted that emotional perspectives have also been used to predict linguistic cues to deceit; e.g., Newman, Pennebaker, Berry, & Richards, 2003). The basic tenet of these approaches is that the different cognitive processes involved during lying or truth telling (e.g., semantic vs. episodic memory) will result in subtle differences in true and false statements. In other words, liars will have difficulty verbally approximating how a truth teller would answer. For example, the Reality Monitoring (RM) approach to deception detection (Alonso-Quecuty, 1992; for overviews see Masip, Sporer, Garrido, & Herrero, 2005; Sporer, 2004) is based on basic memory research focusing on how people distinguish between the sources of their memories (Johnson & Raye, 1981). Memories of experienced events are attributed to external sources, where perception is the primary process involved. Memories of imagined events are attributed to internal sources, where less automatic conscious processes are necessary to fabricate the imagined event. Due to these different processes, statements concerning memories of experienced events are predicted to be qualitatively different from statements concerning memories of imagined events. For instance, memories of experienced events should contain more sensory information associated with perception, while memories of imagined events should contain more traces of cognitive operations necessary for fabrication, such as logical inferences (e.g., *if it was raining outside, then I must have been wearing a jacket*). In so far as truth tellers report experienced events and liars report imagined events, the differences predicted by RM should manifest as verbal cues indicative of honesty or deceit (Vrij, 2015b; for a similar approach see Criteria Based Content Analysis; Steller & Köhnken, 1989).

## General Theories of Deception

The issue of context looms over both emotion-based and cognitive-based approaches to deception. The emotional perspective is reliant on high-stake situations, few differences between truth tellers and liars are expected for low-stakes everyday lies (Ekman & Friesen, 1969). Cognitive approaches face different concerns. For instance, positions that hold that lying is more difficult than truth telling, is only true in some situations—many lies are easier, more automatic, and more socially acceptable than truths (DePaulo et al., 2003; Vrij, 2008). Finally, content analytic approaches are also dependent on context. For instance, Reality Monitoring is only relevant for autobiographical

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<sup>1</sup> Some classify Zuckerman et al.'s (1981) paper as a distinct theory of deception (e.g., Bond et al. 2015), consisting of four elements, arousal, emotional, cognitive, and attempted control. However, Zuckerman et al.'s paper reads more like a summary of existing theories than an attempt to develop a unique four-factor model. Of note is that Zuckerman et al.'s paper highlights that these theoretical positions are not mutually exclusive. A broad theory of deception for example could include both a cognitive and emotional component.



statements, of which many truths and lies are not, and is likely to be less effective when statements concern events in the more distant past (Vrij, 2008). Of particular importance for the current thesis is that RM may not be applicable when judging the veracity of stated intentions. This is because even true statements of intent concern events that have not (yet) occurred. Hence, truth tellers, like liars, cannot base their statements on experienced events.

The context dependency of these approaches has led some researchers to abandon the search for a specific theory of deception. Instead, they focus on other research paradigms, where deception can be understood as one facet of a broader theory. Stiff (1995, 1996; see also Miller, 1983) maintains that deceptive communication can be aptly captured by the extant theories of persuasion (for a similar argument for inter-species deception, see Dawkins & Krebs, 1979). It is argued that deception and persuasion have the same basic goal: to influence the beliefs or behaviors of others. In this light, deception can be understood as one strategy in the persuasion toolbox. Hence, theories and explanations that account for *why* a message is persuasive or not (e.g., Anderson, 1981; Burgoon & Hale, 1988; Chaiken, 1987; Eagly, Chaiken, & Wood, 1981) should likewise account for *why* a deceptive message is believed or not.

DePaulo et al. (2003) approach deception from the perspective of self-presentation (DePaulo, 1992; Goffman, 1959). According to this view we are all adept social actors and routinely engage in impression management. Self-presentation is central to social life and crucial in creating and maintaining social relationships. Lying can be seen as a useful tool for this task. From the perspective of self-presentation, lies are common everyday occurrences (DePaulo et al., 1996) and cues to deceit should be weak (DePaulo et al., 2003). At the extreme, it could be argued that all social interactions come with some form of self-presentation, and as such, all social-interactions involve an element of deceit (Ekman & Friesen, 1969).

The persuasion and self-presentation perspectives provide interesting and novel insights on the topic of deception. However, neither position offers much in terms of aiding in the difficult task of deception detection.

## Empirical Research on Deception

### Traditional Approaches

The merits of the different theoretical approaches are best seen in light of the extant empirical research. In the last decade or so, a number of meta-analyses have emerged on deception research. These have addressed issues of direct importance for the theoretical positions discussed above, such as cues to deceit and deception detection ability. Where possible, the following overview will be based on findings from these meta-analyses.

To begin, research shows that people's ability to detect deceit is poor (Aamodt & Custer, 2006; Bond & DePaulo, 2006). Bond and DePaulo (2006) examined the accuracy of people's veracity judgments in real-time situations without availing of any special aids (e.g., polygraphs or content analytic methods). The results, based on over 24,000 judgments of veracity, showed a mean accuracy of approximately 54%, little better than

simply flipping a coin. Aamodt and Mitchell (2006) supplemented these results by showing that a number of plausible moderators, such as the judge's age, expertise, confidence, or sex, had little effect on accuracy judgments. In a complementary study, Bond and DePaulo (2008) used the basic principles of psychometric theory to examine the influence of individual differences. They concluded that the standard deviation of judges' detection ability is less than 1%. Put differently, assuming that lie-detection ability is normally distributed, if "2 million judges took a test of infinite length under the usual conditions, we would expect less than 1 to achieve more than 58% correct" (Bond & DePaulo, 2008, p. 482).

A primary reason for people's poor deception detection ability is that cues to deception are weak—there is no Pinocchio's nose. Hence, even when one attends to the more relevant cues to deceit, accuracy judgements remain poor (Hartwig & Bond, 2011). In the most extensive meta-analysis to date on cues to deceit, the predictive power of 158 verbal and non-verbal cues, based on over 1,300 veracity assessments, were assessed (DePaulo et al., 2003; see also Sporer & Schwandt, 2006, 2007). No cues were uniquely related to deceit, most showed no relation at all, while the cues that were related typically showed only modest effect sizes. For example, there was no difference between liars or truth tellers with regard to gaze aversion, head nods, or foot or leg movements. Although DePaulo et al. found that some cues showed stronger effects, a recent reanalysis of the same data indicates that even the cues demonstrating larger effects should be interpreted with caution (Bond, Levine, & Hartwig, 2015). The reanalysis found a decline effect, where cues based on higher numbers of studies were associated with weaker effect sizes. Regardless of its explanation, be it publication bias (Lehrer, 2010) or regression to the mean (Schooler, 2011), researchers are in agreement that a decline effect should increase skepticism with regard to the magnitude of the observed effects.

A number of researchers have criticized the authority of these meta-analyses. They highlight important limitations, such as an over-reliance on student samples (O'Sullivan, 2008) or the low motivation of both the senders and receivers (von Hippel & Trivers, 2011). A recent meta-analysis, however, demonstrated that neither motivation, emotion, nor the use of student samples appear to moderate the accuracy of deception judgements (Hartwig & Bond, 2014). Keeping a critical mind with regard to any scientific finding is paramount and potential limitations should always be considered. With that said, the current evidence points clearly towards the same conclusions: cues to deception are weak and unreliable, and deception detection ability, without special aids, is poor. Related to the theoretical positions described above, these results pose serious questions to theories that predict strong and reliable verbal or non-verbal cues to deceit, whether they are grounded in an emotional (e.g., Ekman, 1983) or cognitive perspective (e.g., Zuckerman et al., 1981). Positions which do not predict strong and stable cues to deceit, such as DePaulo et al.'s (2003) self-presentational perspective, fare much better.

Meta-analyses focusing on other aspects of deceit have provided somewhat more positive results. For instance, training has shown to provide improvements in deception detection ability (Driskell, 2011; Frank & Feeley, 2003), particularly for the identification of verbal cues (Hauch, Sporer, Michael, & Meissner, 2014). However, the improvements were modest at best, ranging in magnitude from small to medium effects. A meta-analysis of computer analyzed linguistic cues to deceit found a number of differences in the way

that truth tellers and liars use language (Hauch, Blandón-Gitlin, et al., 2014). However, the strength of the linguistic cues were again quite modest and varied considerably, depending on which theoretical framework provided the prediction (e.g., support was found for a cognitive load approach, but little was found for a Reality Monitoring approach). Finally, although no formal meta-analysis exists, overviews of content analytic methods are quite positive. For instance, RM consistently results in accuracy rates in the 60-70% range (Masip et al., 2005; Vrij, 2008), an improvement on the 54% reported by Bond and DePaulo (2006). The results of the overviews on training, linguistic analysis, and content analytic approaches indicate that verbal approaches to deception may be more fruitful than non-verbal approaches. Nonetheless, these far from perfect classification rates indicate that accurate lie detection remains an elusive task.

### New Directions: Strategic Interviewing

In the studies above, the receivers are passive—they are required to make veracity judgements of statements that they simply receive. In such situations it is perhaps not surprising that veracity judgements are poor and cues to deception are weak—it seems that in real life one rarely uncovers lies when passively receiving statements (Park, Levine, McCormack, Morrison, & Ferrara, 2002). But what if the receiver was not passive? What if the receiver had the opportunity to question the sender? Or better still, what if the receiver had a systematic method of strategically interviewing the sender? It is such questions that a growing number of researchers have raised (e.g., Hartwig & Bond, 2011; Levine, 2014; Vrij & Granhag, 2012; Vrij, Granhag, & Porter, 2010). Gathered under an umbrella term *strategic interviewing*, this new focus on the receiver's (henceforth interviewer's) role in unveiling deceit has been touted as a “genuine paradigm shift in the science of human lie detection” (Kassin, 2012, p. 118). In brief, strategic interviewing methods are designed to elicit new, or strengthen the otherwise weak, cues to deceit.

Grounded in a cognitive approach to deception, strategic interviewing methods emphasize the different psychological states that truth tellers and liars inhabit. For example, drawing on research on self-regulation, Granhag and Hartwig (2008) explain how liars and truth tellers will typically face differing information management dilemmas. Liars, by definition, must conceal some of the information they hold and actively work against the interviewer uncovering it. Truth tellers, in contrast, are actively working to ensure that interviewers come to know what they know. As such, truth tellers are typically cooperative and forthcoming. This is just one example, but it emphasizes how the cognitive states of truth tellers and liars can differ (see also Hartwig, Granhag, Strömwall, & Doering, 2010; Jordan & Hartwig, 2013).

On their own, however, cognitive differences between liars and truth tellers need not result in reliable cues to deceit, hence, the need for strategic questions. The idea is that the interviewer will avail of the cognitive differences between truth tellers and liars in order to tease out discernable and measurable cues to deceit (Vrij, 2014). Another important aspect of strategic interviewing is that it addresses the issue of context. For instance, as noted above, many have argued that lying is more cognitively demanding than truth telling (Zuckerman et al., 1981), but only in certain contexts (Vrij, 2008). In

some contexts truths may be as, or more, difficult to tell than lies. Through the use of strategic questioning the interviewer can constrain the context, and thereby reduce the occurrence of situations where truth tellers experience more cognitive load than liars (see the unanticipated questions approach below).

To date, a number of strategic interview methods have been developed and empirically examined, including: the cognitive load approach (Vrij, Fisher, Mann, & Leal, 2008); the Strategic Use of Evidence technique (Hartwig, Granhag, Strömwall, & Kronkvist, 2006); the devil's advocate approach (Leal, Vrij, Mann, & Fisher, 2010); the verifiability approach (Nahari, Vrij, & Fisher, 2014); the Cognitive Interview for suspects (Geiselman, 2012); Assessment Criteria Indicative of Deception (Colwell, Hiscock-Anisman, Memon, Taylor, & Prewett, 2007); and the unanticipated questions approach (Vrij et al., 2009). One meta-analysis has demonstrated the promise of strategic interviewing approaches (Vrij, Fisher, & Blank, 2015). The meta-analysis focused exclusively on studies where veracity judgements were made. This included studies on imposing cognitive load, unanticipated questions, and methods that encouraged the suspects to say more (such as the Cognitive Interview for suspects). The average detection when availing of such strategic interviewing approaches was approximately 71%, markedly higher than the 56% observed when no strategic methods were used.

The theoretical framework for true and false intentions developed below incorporates elements of strategic interviewing, albeit with an intention-specific theoretical grounding. The specific studies in this thesis rely primarily on the unanticipated questions approach. This necessitates a more thorough description of this approach (for a comprehensive overview of the other strategic interviewing methods, see Clemens, 2013; Vrij, 2014).

### The Unanticipated Questions Approach

Research on suspects' counter-interrogation strategies shows that truth tellers, taking their own credibility for granted, tend not to prepare for upcoming interviews. Instead, they simply rely on their memory and answer questions, in a cooperative manner, to the best of their ability (Granhag, Hartwig, Mac Giolla, & Clemens, 2015). Liars, in contrast, will prepare for an interview when given the opportunity (Hartwig, Granhag, & Strömwall, 2007; Hines et al., 2010). Preparation makes the cognitively demanding task of lying easier (Vrij et al., 2009) and accordingly, research shows that planned lies produce fewer cues to deceit than spontaneous lies (DePaulo et al., 2003). In addition, people seem to be aware of the relationship between planning and lying. In one study, examining students', prison officers', and convicted prisoners' beliefs about deception, all groups emphasised the importance of preparing false statements in order to reduce cues to deceit (Granhag, Andersson, Strömwall, & Hartwig, 2004).

However, liars' preparations are dependent on correctly predicting what questions the interviewer will ask. The unanticipated questions approach builds on this idea, where the basic aim is to ask questions that an interviewee is unlikely to have prepared answers for. Specifically, the questions should be devised so that truth tellers can recall answers from memory, but liars must fabricate answers on-the-spot (Vrij et al., 2009). This should constrain the context, ensuring that liars find the unanticipated questions more cognitively

demanding and generally more difficult to answer than truth tellers. A forerunner to this approach is the Assessment Criteria Indicative of Deception (ACID) developed by Colwell and colleagues (2007). In this study, participants who completed either an innocuous task (truth tellers) or a mock-transgression (liars) were interviewed about their activities. Inspired by the Cognitive Interview (Geiselman et al., 1984), ACID included specific questions designed to enhance memory performance—such as asking participants to provide their statements in reverse chronological order. These questions aided truth tellers' memory, but hampered liars' ability to provide statements, most likely because of their unanticipated nature. Through the use of ACID, Colwell et al. were able to correctly identify 33 of 38 participants as truth tellers or liars.

Subsequent research has shown that for anticipated questions, liars can provide similar answers to truth tellers on a range of measures, including length (Sooniste, Granhag, Knieps, & Vrij, 2013), detail (Granhag & Strömwall, 2002), and plausibility (Vrij, Leal, et al., 2010). In stark contrast, for unanticipated questions, truth tellers typically provide longer, more detailed and more plausible answers than liars (Vrij, 2014). Furthermore, the unanticipated questions approach is an adaptable interviewing technique that can make use of common contextual factors to aid in deception detection. This includes situations when there are multiple suspects or where suspects are interviewed more than once.

### Consistency and Unanticipated Questions

Lay people and legal professionals place great weight on consistency as a cue to deceit, typically believing the less consistent people are the more likely it is that they are lying (Akehurst, Köhnken, Vrij, & Bull, 1996; Strömwall & Granhag, 2003; The Global Deception Research Team, 2006). It is therefore unsurprising that consistency emerges as a frequently used and influential cue to deceit in both investigative and judicial settings (de Keijser, Malsch, Kranendonk, & de Gruijter, 2011; Greuel, 1992). A striking example is the Supreme Court of Sweden's formal inclusion of statement consistency as a cue when judging the veracity of a testimony (Schelin, 2007).

Contrary to the beliefs of both lay people and legal professionals, research has shown that liars can be as consistent as truth tellers with regards to both *within-group consistency* (i.e., how similar the statements of group members are) and *between-statement consistency* (i.e., how similar the multiple statements of a single suspect are; Granhag & Strömwall, 2002; Granhag, Strömwall, & Jonsson, 2003; Vredevelde, van Koppen, & Granhag, 2014). The prevailing explanation for such findings is the 'repeat vs. reconstruct' hypothesis (Granhag & Strömwall, 1999, 2001). In brief, it claims that liars will not take their innocence for granted. For this reason, they will prepare answers for an interview and simply repeat them throughout multiple interviews, in an explicit attempt to increase between-statement consistency. In other words, liars' answers are often based on well-rehearsed statements, or lie scripts (Colwell et al., 2007). This can be contrasted with truth tellers. Truth tellers will often take their innocence for granted (Kassin, 2005; Kassin & Norwick, 2004), and in turn be less likely to prepare answers. Instead, truth tellers will spontaneously recall their unrehearsed answers from memory. Importantly, remembering is a reconstructive process often accompanied by omissions and commissions (Baddeley,

1997; Schacter, 1999). This allows inconsistencies to creep into truth tellers' statements. Taken together, this explains how liars can achieve consistency levels comparable to those of truth tellers. The same reasoning can be applied to within-group consistency. Liars, for fear of not being believed, may prepare joint statements in an explicit attempt to increase within-group consistency. Truth tellers will be less likely to do so, resulting in a natural variation between group members' statements.

Through the use of strategic interviewing, specifically the unanticipated questions approach, it is possible to take advantage of contextual factors such as groups and repeated interviews. For instance, in group situations, although liars may jointly prepare their alibis in an attempt to reduce inconsistencies between their statements, their preparations will be limited—they cannot attend to all relevant issues. Unanticipated questions capitalize on this. Inconsistencies can be elicited by asking questions unlikely to be covered by liars' prepared answers. In other words, the goal is to disrupt liars' repeat strategy. If framed correctly, truth tellers' within-group consistency levels should be unaffected, since group members can simply recall the truth even for the unanticipated questions. This approach has been applied to both multiple suspects (Vrij et al., 2009) and repeated interviews (Leins, Fisher, & Vrij, 2012) to great effect. The results, in brief, showed that liars were as consistent as truth tellers, but only when answering anticipated questions.

In sum, despite the myriad of theories predicting strong and reliable cues to deceit, meta-analyses on deception detection show otherwise, demonstrating that cues to deceit are faint and unreliable. Insofar as every challenge is an opportunity, these findings have spurred researchers in new directions such as strategic interviewing methods. Although still in its infancy, strategic interviewing has shown great promise. The current thesis builds on these strategic interviewing methods by applying them within a theoretical framework of true and false intentions—the topic focused on next.

## True and False Intentions

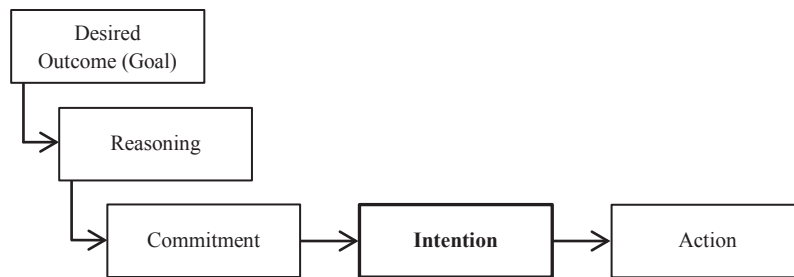
To reiterate, lies come in many different forms which has resulted in a number of different deception theories. These theories, however, have overlooked one important facet of lies, namely, that they can refer to past or future actions (Granhag, 2010). In the following sections it is argued that a focus on statements concerning future actions (i.e., statements of intent) can provide unique insights into deception detection.

### Defining Intent

In this thesis I will rely on the definition of intent provided by Malle and Knobe (1997, 2001). The authors adopted a folk-conceptual approach that relies on collating people's intuitive understanding of a term (this can be contrasted with the normative approach of philosophical enquiry; e.g., Anscombe, 1957; for an overview see Setiya, 2015). This analysis resulted in three necessary tenets of intent. First, an intention involves the desire to attain some future goal or state—an intention is goal directed (*I intend to watch a movie on Friday night*). Importantly, the content of an intention must also refer to a person's own actions (although you can desire that someone goes to the

movies, you cannot intend them to). Second, the action to be performed must have received a minimum degree of reasoning. This includes a weighing up of one's desires (*what else do I want to do on Friday night?*), and an assessment of one's abilities and resources (*can I afford to see a movie on Friday night?*). The final tenet of an intention is the degree of commitment. In brief, higher commitment (*I've already bought my ticket for Friday night*) is a stronger sign of intention formation than lower commitment (*I haven't fully decided if I'm going yet*). Therefore, an intention is formed when it refers to one's own actions, has received some degree of reasoning, and is accompanied by a strong degree of commitment to carry out the action. This puts an intention at the end of a causal deliberation process that precedes a goal directed action.

Figure 1. Components of an intention as identified by Malle and Knobe (1997, 2001)



The model depicted in Figure 1, however, leaves the intentional act ambiguous in many regards. For instance, the intended act can be planned for the near or distant future, it can be straight-forward or complex, and abstract or concrete. In order to create a coherent research agenda, Granhag (2010) therefore suggested an initial delineation, by providing a restricted, working definition, of intent. Granhag defined an intention as a planned single act to be performed in the near future. It is this refined working definition that will be used throughout the thesis.

Based on this stricter account, a statement of true intent refers to a single act one genuinely plans to perform in the near future. In contrast, a statement of false intent refers to a single act one claims, but does not in fact intend to perform in the near future. Though false intentions can occur in different guises (Mac Giolla, Granhag, & Vrij, 2015), a common use, and the focus of this thesis, is a *cover-story*. That is, a false statement about your future actions is given to mask the actual actions (e.g., criminal actions) you intend to carry out (for the related research field on uncovering concealed criminal intentions see Burgoon et al., 2009; Koller, Wetter, & Hofer, 2015a, 2015b). Although non-verbal false intentions can be imagined (e.g., the footballer who feigns the direction of her run), the focus of the extant research on true and false intentions, and of the current thesis, is on verbal statements of intent.

## Research on True and False Intentions

The first studies on true and false intentions focused simply on (1) the ability to detect deceit when no specific methods are used (Vrij, Granhag, Mann, & Leal, 2011) and

(2) how, in such situations, accuracy of veracity judgments compare to veracity judgments of statements about past events (Vrij, Leal, Mann, & Granhag, 2011). The first study resulted in a discrimination accuracy of approximately 70% (Vrij, Granhag, et al., 2011). This is markedly higher than what is typically found in deception studies, where accuracy rates are often little better than chance (Bond & DePaulo, 2006). This finding was corroborated in the second study (Vrij, Leal, et al., 2011). Again, accuracy rates, discriminating statements of true and false intent, were approximately 70%. In contrast, and in line with previous research, an accuracy rate of approximately 55% was found for true and false statements of past events. These studies, however, say little with regard to theory, and accuracy rates based on merely two studies should always be interpreted with caution. Nonetheless, the accuracy rates hint at the possibility that true and false statements about future and past events may differ in some way.

Subsequent studies can be classified into two broad approaches. In the first approach, researchers have extended traditional deception detection techniques, that is, techniques that are typically used on statements about past events, to situations of intent (for a review, see Granhag & Mac Giolla, 2014). These advances have been made with mostly promising results. For instance, the Strategic Use of Evidence technique (Clemens, Granhag, & Strömwall, 2011); the Concealed Information Test (Meijer, Smulders, & Merckelbach, 2010; Meijer, Verschuere, & Merckelbach, 2010; Meixner & Rosenfeld, 2011; Noordraven & Verschuere, 2013); the autobiographical Implicit Association Test (Agosta, Castiello, Rigoni, Lionetti, & Sartori, 2011); and the Sheffield Lie-Test (Suchotzki, Verschuere, Crombez, & De Houwer, 2013) have all been successfully adapted to distinguish between statements of true and false intent in laboratory settings. Other approaches, however, have not fared so well. This includes techniques based on thermal imaging (Warmelink et al., 2011) and predictions about eye movements derived from Neuro Linguistic Programming theory (Mann, Vrij, Nasholm, et al., 2012; for a more promising approach to eye movements and true and false intentions derived from research on counter-interrogation strategies see Mann, Vrij, Leal, et al., 2012). Deception detection techniques are likely to extend successfully to situations of intent when there is a sound underlying theory that is independent of whether statements concern past or future events.

In the second approach, researchers have sought to develop distinct methods of deception detection based on the unique properties of intentions. These methods are based on the same basic line of reasoning. First, an intention is a unique psychological construct that is typically accompanied by a host of related constructs (e.g., goals) and behavioral consequences (e.g., in-depth planning). Second, it is assumed that these concomitants of intent should be more salient for those with a true intention compared to those with a false intention. In other words, liars will not engage to the same extent as truth tellers in the varying activities and consequences typically associated with the formation of an intention. These discrepancies can in turn be exploited by strategic interviewing methods, by highlighting new intention-specific cues to deceit, or by a combination of the two (Granhag & Mac Giolla, 2014; Mac Giolla, Granhag, & Vrij, 2015). In the following sections I will outline a number of important concomitants of intent and corresponding fields of research. Following this, I will attempt to integrate these seemingly disparate areas and, in doing so, take the first steps towards a theory of true and false intentions.



## Consequences and Concomitants of Intentions

Malle and Knobe's (1997, 2001) account of intentions highlights the important point that intentions are composed of and accompanied by related psychological constructs such as goals. However, the three requisites of intentions highlighted in Figure 1 (above), *goals*, *reasoning*, and *commitment*, should only be seen as the basic requirements of intent. There is likely to be a number of other typical concomitants and effects associated with the formation of an intention. These range from general behavioral effects, such as tendency to plan (Mumford, Schultz, & Van Doorn, 2001), to specific cognitive phenomena, such as episodic future thought (Szpunar, 2010). The examples that follow are not an exhaustive list of fields of research relevant for intentions. Rather, they represent the areas that have thus far received attention from researchers of true and false intent.

*Intentions and goals.* Intentions are goal directed. They are performed to attain a desired end-state (Malle & Knobe, 1997). Hence, an unfulfilled intention implies an active goal. Whether conscious (Ajzen, 1991) or not (Bargh & Huang, 2009), active goals influence our behavior in unique and predictable ways (Förster, Liberman, & Friedman, 2007; Martin & Tesser, 2009). Martin and Tesser list five markers of motivated behavior: *persistence-until* (that goals remain active until they are attained); *equifinality* (that different actions can be performed to attain the same outcome); *docility* (that avenues of action shown to be unhelpful in goal attainment are abandoned while more successful avenues are retained); *affect* (that goal attainment in and of itself is associated with satisfaction); and *effort* (a balance is made between the value of the goal and the difficulty in achieving it).

As well as these broad markers, active goals have specific behavioral consequences. Amongst other things, active goals influence our memory, attention, and evaluative judgements. For instance, attention is drawn towards goal related objects (Moskowitz, 2002; Rothermund, 2003). Similarly, information related to active goals shows a heightened activation and accessibility in our minds (see the intention superiority effect; Goschke & Kuhl, 1993; Penningroth, 2005) and is better remembered than information related to completed goals (Zeigarnik, 1939). Research also shows that interpretation of ambiguous stimuli is based on active goals, and in a manner likely to facilitate goals (Strachman & Gable, 2006; Voss, Rothermund, & Brandtstädter, 2008). For example, in one study participants engaged in a color discrimination task, where one color indicated a financial gain and another color indicated a financial loss. In trials where the color was ambiguous, participants had an increased tendency to interpret it as the color indicating a financial gain, thereby, demonstrating a motivational bias (Voss et al., 2008). Similarly, with regard to judgements, objects are evaluated based on their utility for an active goal (Brendl, Markman, & Messner, 2003; De Houwer, 2009; Ferguson, 2007), with some arguing that most, if not all, evaluative judgments are made in light of some goal (Markman & Brendl, 2000). Hence our preference for a cold drink on a hot day, or why an Allen key is preferred over a hammer when assembling IKEA furniture.

Furthermore, these behavioral consequences, as well as goal activation, and goal pursuit, can occur outside of conscious awareness (Bargh & Chartrand, 1999). Researchers have taken this as evidence of the particular proficiency of the human mind

to pursue goals. Although attributing a particular significance to goals is by no means new (e.g., Lewin, 1935; Tolman, 1932), the growing body of research on non-conscious goal pursuit has led some researchers to the extreme position that active goals are the primary “unit of control over higher mental processes, not the self or individual person” (Bargh & Huang, 2009, p.131; see also Bargh & Ferguson, 2000; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Bargh, Green, & Fitzsimons, 2008). Regardless of whether or not one is an advocate of the radical position of Bargh and colleagues, it is doubtless that goals have a particular and significant influence on behavior. Insofar as intentions activate goals, any expected consequences of active goals are also expected to accompany intentions.

*Intentions and planning.* The exact relationship between planning and intent remains an open question. As noted, some basic degree of reasoning is necessary for an intention (see Figure 1). Whether such deliberation should be seen as a plan—specifically, a more detailed action plan—is debatable (Malle & Knobe, 2001). Regardless of whether a plan is a necessary component of an intention, researchers are in agreement that plans can and often do accompany intentions (Harman, 1986; Malle & Knobe, 2001; Mele, 1992). To further complicate matters, the relationship between planning and intentions is not unidirectional. For instance, plans developed during the reasoning phase may lead to intentions. Alternatively, a fully formed intention may be the catalyst in the development of more detailed plans (Malle & Knobe, 2001).

An informative distinction is made by Gollwitzer (1999), who refers to *goal intentions* and *implementation intentions*. Goal intentions simply refer to the ‘what’ (e.g., *I intend to lose weight*), and, as such, are similar to the concept of intentions in Figure 1. Implementation intentions are concrete ‘if-then’ plans. They include the what, where, when and how of goal attainment (e.g., *I intend to lose weight by going for a 30 min jog every morning at 7 a.m.*). Simple goal intentions are notoriously weak, and do not necessarily lead to action (Armitage & Conner, 2001; Sheeran, 2002). More specific action plans, such as implementation intentions, help people overcome this intention-behavior gap (Gollwitzer & Sheeran, 2006). However, the creation of such specific plans is unlikely, if a goal intention has not been formed (Sheeran, Milne, Webb, & Gollwitzer, 2005). Thus, detailed plans can be seen as an important, though perhaps non-essential, component in the initiation of goal directed action.

*Future oriented thought.* Just as planning is a typical concomitant of intentions, episodic future thought (EFT) is a typical, often automatic, concomitant of planning. EFT refers to our ability to pre-experience future events through mental simulation, with a strong focus on visual imagery (Atance & O’Neill, 2001). EFTs differ from other forms of future thinking or mental time travel (Suddendorf & Corballis, 1997) insofar as they are self-directed and concern specific future instances (Szpunar, 2010). In this sense they are analogous to episodic memory. While episodic memory refers to memories of autobiographical events that occurred at a specific time and place, EFT refers to autobiographical events at a specific time and place sometime in the future. The link between EFT and episodic memory is furthered by research demonstrating that our databank of memories provides the building blocks for future thinking. That is, memories

of past events are used to create mental representations of the future (Schacter, Addis, & Buckner, 2008).

An important function of episodic future thought is to aid in planning and goal attainment (Schacter et al., 2008; Szpunar, 2010). Through mental simulation one can pre-experience an event, or test alternative scenarios, which can help one prepare for potential problems and opportunities during task performance (Schacter et al., 2008). Put differently, through mental simulation one can practice an activity without the strains, risks, or resources needed to physically rehearse the activity. EFTs are also related to other forms of future-oriented thought, such as prospective memory, our ability to remember to carry out our intentions (Meacham & Singer, 1977; for a review see Brandimonte, Einstein, & McDaniel, 2014). Prospective memory is crucial for action initiation and, therefore, is of great importance for any theory of intent. Through mental imagery, it is thought that EFT can aid prospective memory by allowing individuals to better recognize specific environmental cues for action initiation (Schacter et al., 2008). In sum, EFTs are a common concomitant of planning, and in turn, of intentions, that are thought to aid in the planning process.

*Construal Level Theory.* Whereas the focus until now has been on behavioral and cognitive consequences of intentions, Construal Level Theory (CLT) provides a basic framework for understanding how people represent intentions in their minds. CLT was developed to systematize and explain how one represents situations that are not in the here and now, such as memories of past actions and thoughts about future ones (Trope & Liberman, 2010). CLT holds that, with oneself as an egocentric reference point, objects can be more or less psychologically distant. Psychological distance in turn affects how we represent objects: psychologically proximal objects are represented by concrete lower-level mental construals, while psychologically distant objects are represented by abstract higher-level construals (Trope & Liberman, 2010). Four forms of psychological distance have been proposed: social, temporal, spatial, and hypothetical (Soderberg, Callahan, Kochersberger, Amit, & Ledgerwood, 2014). It is the latter three forms that are particularly relevant for intentions. For example, intended actions can occur in the near or distant future, they can be performed close by or far away, and they can come with different levels of commitment influencing the likelihood (*hypotheticality*) of carrying out the intention. A recent meta-analysis has demonstrated a reliable medium sized effect of psychological distance on mental construals that has been replicated across time, researchers and settings (Soderberg et al., 2014). In line with CLT, the results demonstrate that psychologically distant objects are represented more abstractly than psychologically proximal objects. This finding held for all four types of psychological distance.

Research on CLT has also shown a host of ‘downstream consequences’, in other words, secondary effects of the level of mental construal. When related to intentions, these downstream consequences can influence such things as predictions of task performance, what elements of the future act one focuses on, and intention choice. For example, people are more confident about their performance ability (e.g., on a test) in the distant vs. the near future (Nussbaum, Liberman, & Trope, 2006). For intentions in the distant future, people also place more importance on the desirability of end states, compared to the steps involved in attaining the end states. The opposite is true for

intentions in the near future, where the concrete steps command relatively more attention than the desirability of the end state (Liberman & Trope, 1998). This in turn can have concrete effects on more explicit behavior such as intention choice. For example, the number of hours people were willing to volunteer increased the further in the future the volunteering was to take place (Eyal, Sagristano, Trope, Liberman, & Chaiken, 2009). As with the effect of psychological distance on mental construals, Soderberg et al. (2014) found a reliable and medium sized effect of mental construal on downstream consequences.

## Towards a Theoretical Framework of True and False Intentions

To reiterate, intentions necessarily imply the activation of goals. Goals in turn influence how we engage with the world. Goals are the catalyst for planning, they determine what information in our environment is most salient, they influence how we evaluate objects, and they indirectly give rise to phenomena such as episodic future thoughts. Though seemingly disparate, these differing concomitants of goals, and thus intentions, have a single common element: they all aid in goal attainment. It is unnecessary to point out that planning aids in goal attainment (Mumford et al., 2001) and the more detailed the plan the better (Gollwitzer, 1999). The more automated concomitants and indirect consequences, of goal directed behavior, also aid in goal attainment. For instance, the increased salience of goal related information allows one to more quickly react to opportunities or hazards in the environment. Similarly, the evaluation of objects based on their respective utility for active goals lets one know which objects will aid or hinder goal attainment—which objects to approach or avoid (De Houwer, 2009). By providing the opportunity to practice the event through mental simulation, episodic future thoughts are also expected to aid in goal attainment (Schacter et al., 2008). Even Construal Level Theory can be understood from a goal perspective. For example, people tend to have more positive representations of distant goals. This may be necessary to maintain interest in the distant goal. However, as the goal approaches the representation becomes more realistic, highlighting instead concrete aspects, such as specific obstacles that need to be overcome in order to achieve the goal (Trope & Liberman, 2010).

The crucial point is that a stated false intention, by definition, does not include the activation of a goal. Since there is no goal to obtain, it follows that the consequences of intention formation, that might aid in goal attainment, are no longer functional. These consequences become unnecessary, superfluous. In other words, false intentions should not naturally be accompanied by the direct and indirect trademarks of goal-directed behavior. Therefore the predictable concomitants of true intentions should be weaker or nonexistent for those expressing a false intention. For example, those expressing a false intention should be less likely to create detailed plans for how to carry out their stated intentions, information in the environment should not be processed in relation to their stated intentions, and they should be less likely to experience episodic future thoughts related to their claimed future activity.

As an example, consider the false intention uttered by 17 year old John. John tells his parents that he intends to go to the cinema on Friday night, as a cover-story to mask

his genuine intention of going to a house party on Friday night. Since going to the cinema is John's false intention, the typical consequences of goal directed behavior should not be associated with it. With regards to planning, John's plans to go to the cinema should be limited in depth. He may not have considered which snacks to buy or that the queues most Friday nights will require that he arrives 10 minutes earlier than on any other day. Similarly, information in the environment should not be processed in relation to John's stated false intention. For example, objects should not be evaluated based on the goal to go to the cinema: John may for instance show a neutral evaluation of a cinema ticket. Finally, it is less likely that John will have episodic future thoughts about going to the cinema. It is, for instance, less likely that he momentarily imagines the taste of buttery popcorn, which reminds him of the importance of bringing an extra napkin. These functional consequences of intention formation are simply unnecessary for John's stated false intention, and hence should be less pronounced compared to if he genuinely was going to the cinema. Cognitive resources are limited, and it seems unwise to spend them on goals never intended to be achieved.

Of course, although not stated, John has a true intention: to go to the house party. The consequences of goal directed behavior should therefore exist for this hidden, genuine intention, but not for the stated false intention. So, instead of snacks for the cinema, John may consider which drinks to buy for the party, he may evaluate a six pack of beer as more positive than a cinema ticket, and he may be more likely to imagine the taste of alcohol rather than buttery popcorn, which reminds him to bring a pack of chewing gum to cover the smell of alcohol on his breath from his parents.

Those with a false intention can always attempt to impersonate truth tellers by claiming to have engaged in or experienced the expected consequences of genuine intentions. However, this impersonation is dependent on an accurate understanding of the typical behavior of those with a true intention. Basic psychological research on intentions allows one to paint a fuller and more nuanced picture of someone with a true intention. The more detailed this picture becomes the more difficult it becomes for liars to depict it. This echoes the sentiment in Granhag's (2010) seminal paper on true and false intentions. Using an analogy of counterfeit money, Granhag explains that one cannot recognize a fake coin until one can recognize a genuine one. Hence, the first task of a research agenda of true and false intentions is to examine trademarks of true intentions. Granhag, however, is less clear on where to look for such trademarks. I argue that the trademarks of most diagnostic value will be those related to goal-directed behavior, specifically, the predictable consequences that aid in goal attainment. This is because these consequences should be less likely to naturally occur for those stating a false intention.

### Looking For and Eliciting Trademarks of True Intent

The question still remains how one should discriminate between statements of true and false intent. One approach is simply to look for verbal trademarks of true intentions in statements of intent. This would fit into the tradition of verbal content analytic approaches (Johnson & Raye, 1981; Steller & Köhnken, 1989) or the more automated linguistic analytic methods (Hauch, Blandón-Gitlin, et al., 2014). A central tenet of these approaches is that liars' approximations of true statements will be limited in

some regards. This may be because the cognitive sources of lies differ from truths (Johnson & Raye, 1981; Masip et al., 2005) or because they hold misconceptions concerning what a truthful account should consist of (DePaulo et al., 2003). In the context of true and false intentions it should be language, indicative of goal-directed behavior, that is sought for. For example, statements of true intent may include more detailed or visual descriptions of the future event, since those with a true intention are more likely to experience episodic future thoughts related to their intentions.

With that said, the meta-analyses on deception, discussed above, highlight how faint and unreliable cues to deceit typically are. Therefore, a second approach is to combine the basic idea of focusing on markers of goal-directed behavior with the new wave of strategic interviewing techniques in order to enhance expected differences between truth tellers and liars. For example, questions can be devised to encourage expected tendencies of those with a true intention. Consider again the concept of episodic future thought. It might be that in open ended statements describing their intentions, neither truth tellers nor liars provide cues suggestive of having experienced episodic future thought. In such situations it may be necessary for an interviewer to pose more specific questions in order to elicit statements on the topic.

### Empirical Support for the Framework

Ask, Granhag, Juhlin, and Vrij (2013) examined one known consequence of goal directed behavior, namely that goals influence our evaluative judgements of objects. The study built on the finding that objects are implicitly evaluated based on their utility for active goals (Ferguson & Bargh, 2004). Ask et al. proposed that this consequence of goal directed behavior would hold true for those with a true intention, but not for those with a false intention. Results from an evaluative priming task demonstrated that truth tellers showed implicit positive evaluations of goal-facilitative stimuli. In contrast, those with a false intention, showed a neutral evaluation of the same stimuli, in accordance with someone who would not have an active goal.

Knieps and colleagues (Granhag & Knieps, 2011; Knieps, Granhag, & Vrij, 2013a, 2013b) focused on episodic future thoughts. In their studies truth tellers planned a shopping trip to a nearby shopping mall. Liars planned a mock-crime to be carried out in the shopping mall, and a cover-story, structurally similar to the truth tellers' task, in order to mask their intended actions. The cover-story was their false intention. Self-report measures showed that truth tellers were more likely to have EFTs, and to have clearer EFTs related to the shopping task, than liars. In addition, the series of studies provides strong and consistent support that, during an investigative interview, truth tellers are more likely to report that they experienced a mental image while planning their future action. Across the studies, approximately 95% of truth tellers reported experiencing a mental image, compared to about 70% of liars. Hence, if suspects do not report that they had a mental image activated during the planning phase, they are most likely lying about their stated intentions. Warmelink, Vrij, Mann, and Granhag (2013) extended the results of Knieps and colleagues by further probing mental images with more specific questions. For example, questions were included that concerned spatial and temporal aspects of the

mental image. The results showed that truth tellers' descriptions of their mental images were more precise than those of liars, and included more spatial and temporal details.

The studies by Ask et al (2013), Knieps and colleagues (Granhag & Knieps, 2011; Knieps et al., 2013a, 2013b) and Warmelink et al. (2013) are all in accordance with the suggested framework described above. They all focus on expected consequences of intentions that aid in goal attainment and demonstrate that these consequences are more pronounced for truth tellers compared to liars. According to the proposed framework, this is because these consequences do not inherently accompany stated false intentions, since their value is lost on people with no active goal. Liars' attempts to approximate truth tellers are in turn limited, resulting in the observed discrepancies.

### Why a Theory of True and False Intentions?

Competing theories on cues to deception are abundant, and the damning results of meta-analyses have even led some researchers to completely abandon the search for traditional cues to deceit (Levine, 2014). Therefore, it seems necessary to justify an attempted development of yet another theory of deception cues. The value of a theory of true and false intentions is twofold. Firstly, a recent meta-analysis on multiple cues to deceit demonstrates that lies can be detected with about 70% accuracy when multiple rather than single cues are used (Hartwig & Bond, 2014). By discovering novel intention-specific cues to deceit, it may be possible to increase the situations when relevant multiple cues can be examined and combined. Secondly, if a sufficient number of stable and generalizable cues, indicative of true and false intent, can be discovered, it may be possible to develop more standardized content analytic procedures or to aid intention-specific strategic interviewing methods. This would be useful since, as noted above, there are theoretical limitations in extending a number of established content analytic methods to true and false intent situations. These methods include Reality Monitoring (RM; Sporer, 2004) and Criteria Based Content Analysis (CBCA; Steller & Köhnken, 1989). The difficulty in extending these techniques to intent situations is that both RM and CBCA focus on distinguishing experienced events from events that were not experienced (e.g., invented). Hence, a strong focus of both procedures is on truth telling cues that are related to the act of perceiving. However, in intent situations, truth tellers have no direct perceptual information to rely on, since the event has yet to occur. In accordance, research has demonstrated that mental images of future events tend to be generally less detailed than mental images of past events (D'Argembeau & Van der Linden, 2004; Gamboz et al., 2010). Hence, established content analytic techniques may be difficult to apply in intent situations since both true and false intentions are derived from cognitive rather than perceptual operations. Relatedly, despite promising developments in strategic interviewing techniques (Vrij et al., 2015), others have found it problematic when applying these techniques to true and false intentions (Fenn et al., 2015). A theory of true and false intentions has the potential to overcome such issues by providing a new focus for content analytic and strategic interviewing methods grounded in basic research on intentions.

## Background to the Studies

Based on this theoretical framework, the goal of the current thesis is to examine other expected consequences of intentions. The specific aim is to examine potential differences in planning behavior and to what extent people experience spontaneous thoughts related to their stated intentions. The studies on planning focus on how differences in truth tellers' and liars' planning behavior could result in differences in their statements of intent. The studies on spontaneous thought are akin to Knieps and colleagues' research on EFT (Knieps, 2013), in assuming that truth tellers will be more likely to experience spontaneous thought related to their stated intentions compared to liars, and hence be more willing and able to answer questions concerning such thoughts in an interview.

### Truth Tellers as Good Planners

It is argued that planning, as an important instrument of goal attainment, will be engaged in to a greater extent by truth tellers (those with a stated true intention) compared to liars (those with a stated false intention). This is not to say that liars will not plan. Rather, liars' planning is primarily expected to be directed at their cover-stories and will be less focused on the concrete steps needed to attain the end states of their stated, but false, intentions. This is because detailed planning aimed to aid goal attainment is surplus to liars' needs. Put differently, it is argued that false intentions, or prepared cover-stories, are less likely to address the planning phase of a stated intention. Terrorist manuals (e.g., the Breivik Manifesto; The Manchester Manual; The IRA Green Book) provide tentative support and external validity for this position. Although these manuals encourage people to prepare cover-stories and answers to specific questions, they explicitly concern the future action of the intention, rather than specific planning that would typically be needed to perform the action. Sooniste (2015) framed the situation in terms of bounded rationality (Simon, 1978). In this view, liars will satisfice more than truth tellers. Their preparations will be 'good enough' to create a believable cover-story. In contrast, truth tellers' preparations should focus on achieving the end state of their intentions. Hence, truth tellers will be more likely to optimize, that is, be more likely to focus on the concrete steps necessary to attain the end states and to engage in detailed planning behavior.

Based on the premise that truth tellers will engage in more in-depth planning, it follows that truth tellers will produce better plans than liars. In turn, it is argued that the discrepancies between truth tellers' and liars' planning behavior may lead to differences in interview statements. Specifically, truth tellers' statements should be colored by markers of good planning behavior to a greater extent than liars' statements. Psychological research on planning provides insights into what constitutes good planning behavior (Mumford et al., 2001) and in turn which markers to look for. One example is the previously discussed concept of implementation intentions (Gollwitzer, 1999). Such plans, since they aid in goal attainment, can be seen as better plans than the ones that do not emphasize the where, when, and how of goal attainment. Furthermore, as noted above, they are unlikely to be formed unless a goal intention has been formed (Sheeran et al., 2005). This indicates that liars (who have not formed a goal intention) should be less likely than truth tellers (who have formed a goal intention) to produce implementation



intentions. Other research suggests that good plans are efficient (Hayes-Roth & Hayes-Roth, 1979), flexible (Keane, 1996), consider alternatives (Kreitler & Kreitler, 1987) and anticipate possible problems (Xiao, Milgram, & Doyle, 1997) (for an overview see, Mumford et al., 2001). The goal of Study I was to examine if such cues, indicative of good planning behavior, would be more common in truth tellers' statements compared to liars' statements.

### Addressing the Planning Phase with Unanticipated Questions

Another approach is to avail of strategic interviewing methods to exploit the expected differences in truth tellers' and liars' planning behavior. For instance, planning can be used as a theme for unanticipated questions. In an intentions scenario, questions on the topic of one's intentions can be seen as anticipated (e.g., *What do you intend to do on your trip?*), while questions on the planning of the intentions can be seen as unanticipated (e.g., *How did you go about planning for your trip?*). That is, liars' cover-stories are likely to address what the intended actions concern, but are perhaps less likely to address the planning that would typically precede such actions. Research has demonstrated that truth tellers and liars provide similar answers for the anticipated questions on intentions. For the unanticipated questions on planning, however, truth tellers tend to provide longer and more detailed answers compared to liars (Sooniste et al., 2013; Warmelink, Vrij, Mann, Jundi, & Granhag, 2012).

As noted, the unanticipated questions approach is a versatile technique. It is particularly suited to certain contextual variables, including groups of suspects and repeated interviews, since it can disrupt a liar's strategy of relaying prepared answers. Sooniste, Granhag, Strömwall, and Vrij (2014) examined whether this would also hold for situations of intent, where planning was the theme for the unanticipated questions. Participants planned activities in either groups of two or four. This allowed for a measure of within-group consistency. This measure was based on the participants' answers to the open questions on intent and the open questions on the planning phase. Results, as predicted, showed that truth tellers' and liars' had comparable levels of within-group consistency for the questions on intent (anticipated questions). However, truth tellers were more consistent than liars for the questions on the planning phase (unanticipated questions). The goal of Study II in this thesis was to extend this line of research by examining whether planning can be used as a theme for unanticipated questions when suspects are not only members of groups, but are also interviewed more than once. This set-up allows for the examination of both within-group and between-statement consistency across anticipated and unanticipated questions.

### Intentions and Spontaneous Thoughts

Spontaneous thoughts go by many names, including day dreaming, thought intrusions, undirected thought and mind wandering. Although subtle differences may exist between these definitions, the umbrella term of spontaneous thought refers to thoughts that occur involuntarily and are not directly related to any task at hand (Christoff, Gordon, & Smith, 2011). The ubiquity of spontaneous thought is astonishing, with research demonstrating that undirected thoughts can account for as much as 30% of people's

conscious awareness (Kane et al., 2007; Klinger & Cox, 1987). Because of their association with failures of cognitive control (McVay & Kane, 2010) and obsessive intrusive thoughts (Clark & Purdon, 1995), spontaneous thought is often cast in a negative light. Others, however, are as quick to champion the positives. They argue that humans would not have developed this curious phenomenon if it did not carry some functional value (McMillan, Kaufman, & Singer, 2013; Mooneyham & Schooler, 2013). Related to intentions, it appears that spontaneous thoughts can aid in problem solving (Christoff et al., 2011; see also research on *insight*, Dorfman, Shames, & Kihlstrom, 1996) and the anticipation and planning of future goals (Baird, Smallwood, & Schooler, 2011). In other words, spontaneous thoughts can aid in goal attainment.

When seen in the light of non-conscious goal pursuit (Bargh & Chartrand, 1999), spontaneous thought can be understood as the temporary, conscious awareness of offline cognitive processing related to an unfinished goal (Christoff et al., 2011). This position is strengthened by neuroimaging research demonstrating that spontaneous thoughts activate brain regions that overlap with those activated during goal-directed thought (Christoff, Ream, & Gabrieli, 2004). With this in mind, it should come as no surprise that unfinished intentions, or unfinished tasks, can generate spontaneous thoughts (Masicampo & Baumeister, 2011; Morsella, Ben-Zeev, Lanska, & Bargh, 2010). Just as with planning, EFT, and other markers of goal directed behavior, it is argued that the functional value of spontaneous thought is lost on those with a false intention. Hence, people stating a true intention should be more likely to experience spontaneous thoughts relating to their stated intention in comparison to people stating a false intention. Study III examined this proposition.

## SUMMARY OF EMPIRICAL STUDIES

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### Study I

The aim of the first study was to test the hypothesis that truth tellers' statements would be colored by markers of good planning behavior to a higher degree than liars' statements. Three markers (cues) were examined. The first cue was *plan efficiency*: specifically, whether participants mentioned that tasks were delegated to group members. The second cue was *problem-related language*: whether participants had envisioned any potential problems, and whether they had prepared any alternative plans. The third cue was related to implementation intentions. It was suggested that truth tellers' statements would consist of proportionately more *how-related utterings* than liars' statements. How-related utterings only partly measured implementation intentions, since the other components of such detailed plans (i.e., the what, where, and when) had already been decided upon in the instructions. In contrast, it was suggested that liars' statements would consist of proportionately more *why-related utterings* than truth tellers' statements. This was because liars, who may not take their own credibility for granted (Vrij et al., 2008), may feel a greater need to justify their future actions.

### Method

The study used the same design developed by Sooniste et al. (2014), which in turn was an extension of the approach devised by Granhag and Knieps (2011). Participants ( $N = 132$ , 93 women,  $M_{\text{age}} = 27.20$ ,  $SD = 9.64$ ) were first divided into triads of truth tellers or liars. Truth tellers planned a non-criminal act (to host a traditional Swedish lunch). Liars planned a mock-crime that involved collecting items from a nearby shopping center. In addition, liars were told to prepare a cover-story in case they were apprehended, the theme of which was to be identical to the truth tellers' task. The cover-story was the false intention. Participants were apprehended and interviewed before they could begin their intended actions. The answers to the open questions on participants' intentions ("Please tell me, in as much detail as possible, what you had intended to do in the shopping center?") were coded for implementation-related utterings and whether participants had decided to delegate tasks between group members. The problem-related language was derived from yes/no answers to specific questions during the interview ("Did you expect any problems to arise during your trip to the shopping center?"; "Did you develop any alternative plans—that is, did you have a plan B?").

### Results and Discussion

Results largely support the hypotheses. Compared to liars, truth tellers' statements consisted of more how-related utterances, they were more likely to delegate tasks, and they were more likely to speak of potential problems. Liars' statements, in contrast, consisted of proportionately more why-related utterances. Against predictions, veracity had no effect on whether or not participants claimed to have developed alternative plans.

Nonetheless, the results, by and large, support the hypothesis that truth tellers' answers would be colored to a greater extent by markers of good planning behavior.

## Study II

The aim of Study II was to examine how anticipated and unanticipated questions influence the within-group consistency and between-statement consistency of statements of true and false intent. Study II consisted of two experiments. Experiment 1 aimed to replicate the findings of Sooniste et al. (2014) but with groups of three, rather than pairs and quartets. The primary hypothesis concerned within-group consistency. Based on previous studies (e.g., Sooniste et al., 2014) it was expected that truth tellers would have higher within-group consistency, but only for the questions on planning (the unanticipated questions). For questions on intentions (the anticipated questions) no such differences were expected (Hypothesis 1). Experiment 2 extended the design to account for multiple suspects and multiple interviews. Here, suspects, who were members of groups of three, were each interviewed three times. Here, the hypothesis of primary interest concerned between-statement consistency. Again, truth tellers were expected to be more consistent than liars but only for the questions on planning (Hypothesis 2). Finally, based on theoretical reasoning and empirical findings (Granhag, Mac Giolla, Strömwall, & Rangmar, 2013; Sooniste et al., 2014), it was expected that truth tellers would provide longer answers to both the unanticipated and anticipated questions; however, the differences were expected to be larger for the unanticipated questions (Hypothesis 3).

## Method

The data for Study II, Experiment 1 ( $N = 132$ , 93 women,  $M_{\text{age}} = 27.20$ ,  $SD = 9.64$ ), came from the same data set as Study I. The interview questions of interest were the anticipated open questions on their intentions ("Please tell me, in as much detail as possible, what you had intended to do in the shopping center?") and the unanticipated open questions on the planning of their intentions ("Please tell me, in as much detail as possible, how you went about planning your trip to the shopping center?"). In Experiment 1, participants were interviewed once. Experiment 2 ( $N = 123$ , 83 women,  $M_{\text{age}} = 27.18$ ,  $SD = 7.81$ ) used an identical design to Experiment 1 except that participants were interviewed on three separate occasions. This allowed for a measure of within-group and between-statement consistency. Again, the questions of interest were the anticipated open questions on intentions and the unanticipated open questions on the planning of their intentions.

## Results and Discussion

For within-group consistency, the following findings were observed in both experiments: truth tellers provided more consistent answers for both questions on planning and questions on intentions; and answers to questions on planning were, across both veracity conditions, less consistent than answers to questions on intentions. These

results differ from Hypothesis 1, where differences between truth tellers and liars were only expected for the questions on planning.

For statement length, there was an interaction between veracity and question type in both experiments. Truth tellers provided longer answers than liars for questions on both their intentions and planning. Furthermore, truth tellers' answers tended to increase in length when describing the planning phase compared to their descriptions of their intentions, whereas liars' answers tended to decrease in length when describing the planning phase compared to descriptions of their intentions. This result held across the two experiments. This result is in line with Hypothesis 3, and is in accordance with the idea that truth tellers who plan in groups will have a great deal to talk about. In contrast, liars should become more withholding in groups, for fear of producing inconsistencies, particularly when asked questions about the planning of their intentions (i.e., unanticipated questions).

In Experiment 2, truth tellers and liars showed a similar level of between-statement consistency for both questions on intentions and questions on planning. This speaks against Hypothesis 2, where it was expected that truth tellers would be more consistent for the question on planning. One possible explanation for this unexpected result is that the questions between interviews did not vary. For this reason, the questions were unlikely to disrupt a liar's repeat strategy. This can account for the relatively high level of between-statement consistency that liars achieved on answers to unanticipated questions. The results regarding between statement consistency have since been replicated in a similar study that used a more fine-grained measure of consistency. The study, examining true and false intentions, measured the omissions (details mentioned in a first interview that were omitted from later interviews), commissions (details not mentioned in a first interview that were added in later interviews) and repetitions (details repeated between interviews) in participants' answers across repeated interviews. The results showed no notable differences between truth tellers and liars on any of the measures of between-statement consistency (Granhag, Mac Giolla, Sooniste, Strömwall, & Liu-Jönsson, 2016).

### Study III

The focus of Study III was on task-related spontaneous thought. As noted above, future tasks create spontaneous thoughts. Based on this idea, it was hypothesized that truth tellers would experience more spontaneous thought related to their stated intention compared to liars, since only truth tellers' stated intentions refer to tasks they intend to carry out. The study consisted of three experiments. Experiment 1 tested the basic claim that those with a true intention will experience more spontaneous thought related to their stated intention than those with a false intention. Experiment 2 extended this by examining whether those stating a true or false intention would differ in their descriptions of their spontaneous thoughts in an interview context. Finally, Experiment 3 built on Experiment 2 by examining a more ecologically valid true intention.

## Experiment 1

The main purpose of Experiment 1 was to test the claim that people with a true intention should experience more task-related spontaneous thoughts compared to those with a false intention.

*Method.* Participants ( $N = 61$ , 34 women,  $M_{\text{age}} = 29.77$ ,  $SD = 9.88$ ) were divided into truth tellers ( $n = 30$ ) and liars ( $n = 31$ ). The sample size was based on previous research using similar measures of spontaneous thoughts (e.g., Masicampo & Baumeister, 2011). Truth tellers (true intention group) received a future task to perform (to come up with arguments for and against the introduction of university tuition fees). Liars (false intention group) received the same instructions as truth tellers, but were explicitly told they were not to perform the task. Rather, their goal was simply to claim that they were to perform the task. The spontaneous thought measure was performed after the two groups produced video recorded statements of intent. The spontaneous thought measure was taken from previous research on spontaneous thoughts (Masicampo & Baumeister, 2011; Smallwood, McSpadden, & Schooler, 2008). The measure consisted of reading a short passage of text and subsequently answering how often one thought about the argument creation task during the reading task and how distracting one found those thoughts.

*Results and discussion.* In brief, results showed that those with a true intention thought more about the future argument creation task during the reading task compared to those with a false intention. In other words, truth tellers had more task-related spontaneous thoughts related to their stated intentions than liars.

## Experiment 2

Experiment 2 extended Experiment 1 by: (1) making the truth tellers' task more complex; (2) increasing the interval between intention creation and intention initiation to one week; and (3) including an interview element about the future intention so that results were not solely based on self-report measures. During the interview, participants were asked about spontaneous thoughts related to their intentions. Based on the idea that task related-spontaneous thoughts are facilitative in goal attainment, it was predicted that truth tellers' descriptions of spontaneous thoughts would be related to problem solving and preparatory work for the future task to a greater extent than liars' descriptions. In contrast, liars' descriptions were expected to consist of more repetitions of the instructions compared to truth tellers' descriptions. This is because liars' prepared answers were expected to be more script-like in nature.

*Method.* Participants ( $N = 55$ , 34 women,  $M_{\text{age}} = 28.05$ ,  $SD = 8.17$ ) were designated as truth tellers ( $n = 28$ ) or liars ( $n = 27$ ).<sup>2</sup> Truth tellers were told they were to participate in a debate with another student in one week's time. The debate concerned plagiarism at universities. In addition, truth tellers were to partake in a brief pre-debate

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<sup>2</sup> A total of 79 participants partook in the study. However, 24 (19 truth tellers, 5 liars) participants did not return for the second session. Issues of attrition are discussed further in the Appendix (Study III).

interview with the debate moderator. They were led to believe that this was a check to see if they were sufficiently prepared for the debate. Liars received the same instructions as truth tellers, but were told they were not going to participate in the debate. Rather, their goal was to perform the pre-debate interview, where they were to convince the moderator that they were in fact going to participate in the debate.

*Results and discussion.* In line with predictions, the self-report measures demonstrated that truth tellers experienced more spontaneous thoughts related to the debate than liars. In contrast, liars experienced more spontaneous thoughts related to the pre-debate interview than truth tellers. This latter finding highlights the importance of the salience of the future task with regard to generating spontaneous thought. Problematically, no differences were found between truth tellers' and liars' descriptions of spontaneous thoughts in the pre-debate interview.

### Experiment 3

One potential explanation for the lack of differences between truth tellers and liars in Experiment 2, is that the preparatory work required for the liars' primary task (i.e., the pre-debate interview) and the truth tellers' primary task (i.e., the debate) may have been quite similar. Hence, liars' deceitful statements may have been embedded in largely true statements. That is, they could describe their genuine spontaneous thoughts about the pre-debate interview, but simply report them as spontaneous thoughts about the debate itself. This could have increased the similarities between truth tellers' and liars' responses, since embedded lies are particularly difficult to uncover (Vrij, 2008). The aim of Experiment 3 was to avoid this potential confound by having the truth tellers' intention more distinct from the interview task. An additional goal of Experiment 3 was to have a more ecologically valid self-generated true intention. Again it was predicted that truth tellers' descriptions in comparison to liars' descriptions, would be more focused on planning issues and potential problems regarding their intentions.

*Method.* A quasi-experimental setup was used, similar to that developed by Warmelink et al. (2012). One hundred participants (72 women,  $M_{\text{age}} = 29.58$ ,  $SD = 10.74$ ) took part in the study. Fifty participants were recruited who had, independently of the study, planned a trip abroad in the coming months. These participants were the truth tellers and the trip abroad was their true intention. Another fifty participants, who had not planned a trip abroad in the coming months, were recruited as liars. Each liar was matched to a truth teller and given information about his/her trip abroad. Hence, the trip abroad was the liars' false intention. In subsequent interviews, truth tellers and liars were asked a series of questions on spontaneous thoughts about the trip.

*Results and discussion.* In brief, the results largely replicated the results of Experiment 2, but with a more ecologically valid true intention. Differences between truth tellers and liars were again observed on the subjective ratings in the post-interview questionnaire. However, these subjective differences did not result in discernable cues to deceit in an interview setting. Two potential explanations are proposed for the lack of

differences between truth tellers' and liars' descriptions. First, the results may once again highlight people's impressive aptitude at lying (Bond & DePaulo, 2006). Second, the results may highlight limitations in people's ability to accurately provide retrospective reports of their spontaneous thoughts. Research shows that retrospective reports of cognitive processes are difficult and prone to error (Nisbett & Wilson, 1977). These errors derive, in part, from people inferring their answers from commonly held beliefs and scripts rather than from actual memories (Ericsson & Simon, 1980; Pearson, Ross, & Dawes, 1992). Hence, although truth tellers believed they were accurately describing their spontaneous thoughts, they may instead have been relying on stereotypical beliefs and schemas to infer their answers. People are also thought to rely on stereotypical beliefs and schemas when fabricating answers. Hence, the similarities between truth tellers' and liars' responses may be due to both groups relying on similar cognitive resources.



## GENERAL DISCUSSION

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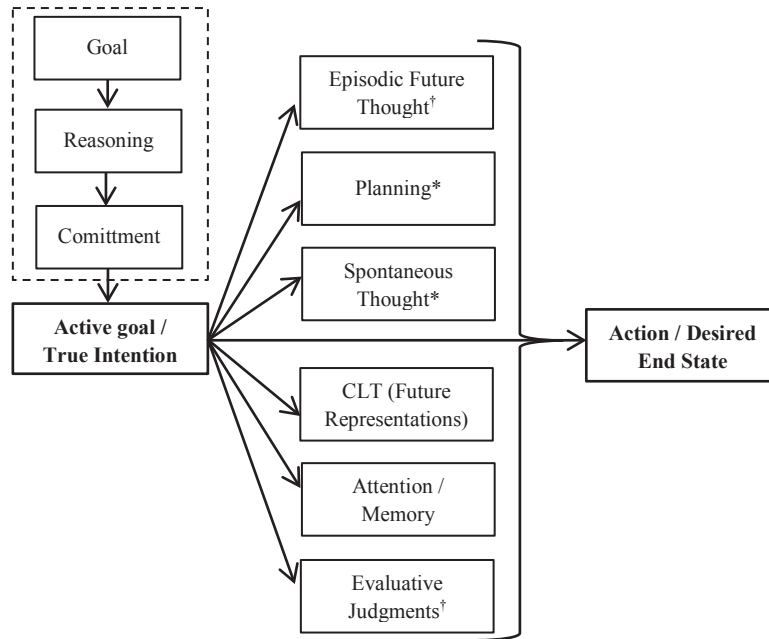
A theoretical framework for true and false intentions was outlined in the introduction. To reiterate, stated true intentions activate goals, while stated false intentions do not. Goals, in turn, have predictable consequences on human behavior (see Figure 2 below for a model over the expected consequences of a true intention/goal directed behavior). In so far as these consequences are beneficial for attaining the active goal, they should be superfluous for the empty goals of a stated false intention. Hence, the predictable and often automatic consequences of active goals should be weaker or nonexistent for those with a false intention. Of course, even if this argument holds, liars can still pretend to have experienced these consequences. Liars can pepper their statements with the expected consequences of true intentions in order to create a believable impression. Therefore, although there may be differences between truth tellers and liars on a conceptual level, these need not manifest as measurable differences on a practical level. Strategic interviewing methods aid in this issue by developing these conceptual differences into measurable cues in an interview setting. The proposed theory of true and false intentions, therefore, has two elements. The first is on a conceptual level and holds that the typical consequences of true intentions or active goals will be weaker for those with a false intention (see Figure 2). The second is on a more practical level and predicts that strategic interviewing methods can be used to enhance or elicit the differences expected on a conceptual level, since these may not otherwise manifest as measurable cues to deceit. The discussion that follows addresses the results of the three studies from these two perspectives.

### Truth Tellers as Good Planners

In Study I it was examined whether truth tellers would engage in better planning behavior than liars. The measure of good planning behavior was related to indicators of plan efficiency, how-related vs. why-related utterings, and tendencies to consider potential problems. As predicted, truth tellers stated that they were more likely to delegate tasks to group members, that is, the measure of plan efficiency. In addition, truth tellers' statements consisted of relatively more how-related utterings than liars' statements. In contrast, liars' statements consisted of relatively more why-related utterings than truth tellers' statements. These differences emerged for statements of intent for anticipated questions which liars had explicitly prepared for. In other words, it was possible to uncover cues indicative of true and false intent without any strategic interviewing techniques, when one knew where to look.

Of these cues, the how-related and why-related utterings are more generalizable. This is because the measure of plan efficiency, whether tasks were delegated to group members, is dependent on situations where intentions are planned in groups. This is not the case for how-related and why-related utterings. As evidence of this, the how-why finding has since been replicated in three separate studies, with groups of suspects (Sooniste et al., 2014) and with individual suspects (Granhag et al., 2016; Sooniste, Granhag, Strömwall, & Vrij, 2015).

Figure 2. A model of typical consequences associated with the formation of a true intention. The consequences are expected to be weaker, or non-existent, for those expressing a false intention.



Note. Constructs inside the dashed line refer to the basic requisites of an intention. Constructs marked with an asterisk were the focus of the thesis. Constructs marked with a † have been examined in previous research. The remaining constructs are suggested areas for future research.

In addition, a different theoretical framework converges with the original explanations of the how-why finding. The original explanation regarded how-related utterings as a proxy measure of an implementation intention, which in turn was seen as an indicator of good planning behavior. In contrast, predictions regarding why-related utterings were derived from research on counter-interrogation strategies which holds that liars are less likely to take their innocence for granted and hence may feel a greater need to justify their future actions by explaining why they are needed to be performed. An additional and more parsimonious explanation comes from Construal Level Theory (CLT; Trope & Liberman, 2010). To reiterate, CLT holds that psychological distance affects the representation of future events, where the more psychologically distant the event, the more abstractly it is represented. Hypotheticality is a particular form of psychological distance of relevance to true and false intentions. It refers to the perceived likelihood of a future event occurring, where events that are unlikely to occur are perceived more

abstractly than events that are highly likely to occur (Wakslak, Trope, Liberman, & Alony, 2006). Since false intentions, by definition, come with a low likelihood of being carried out (in fact the probability should be zero), while true intentions come with a high likelihood, it follows that false intentions should be represented more abstractly than true intentions.

Furthermore, research on CLT has demonstrated that actions construed in more abstract terms are linked to issues concerning *why* the action is to be performed, emphasizing the superordinate purposes of the action. In contrast, actions construed in concrete terms are linked with *how* the action is to be performed, emphasizing concrete procedural steps (Rim et al., 2014; Stephan, Liberman, & Trope, 2010; Wakslak & Trope, 2009). Hence, due to liars' low likelihood of performing their stated intentions, CLT also predicts that they will focus more on *why* the intention is to be carried out. In contrast, since truth tellers have a high likelihood of performing their stated intentions, CLT predicts that truth tellers will focus more on *how* the intention is to be carried out. This is in agreement with the observed results.

The CLT perspective can also be incorporated within the proposed framework of true and false intentions. For example, the reason events with a high likelihood of occurring are more likely to be considered in concrete terms, is that attending to concrete procedural steps will aid in goal attainment. However, attending to concrete procedural steps is likely to be considered an ineffective use of resources if there is a low likelihood of the event occurring, as is the case with a false intention. Hence, liars may be more likely to think of the future event in more abstract terms. This idea would also be in line with those who propose that liars avail of scripts of limited scope to fabricate their statements (DePaulo et al., 2003).

The cues discussed so far were derived from statements to anticipated questions. However, the proposed theory is also inspired by recent developments in strategic interviewing (Vrij & Granhag, 2012). In Study I questions were asked so as to elicit markers of good planning behavior. One marker of good planning behavior is the tendency to anticipate problems with one's plans (Mumford et al., 2001), that is, problems in carrying out one's intentions. To this end, participants were asked "Did you expect any problems to arise during your trip to the shopping center?" Truth tellers (73%) were considerably more likely to say 'yes' than liars (37%). This finding shows the value in combining the basic research on intentions with strategic interviewing methods. Or rather, how basic research on intentions can uncover themes for unanticipated interview questions. This result also highlights how straightforward strategic interviewing can be. The question asked required only a yes/no answer and could readily be included in an interview protocol. With that said, it is seldom so easy. While the question on potential problems produced differences, the question on back-up plans did not. Nonetheless, as a first study focusing on how markers of good planning behavior can be elicited to distinguish between those with a true and false intention, the results are promising.

### Intention-Related Spontaneous Thoughts

In Study III it was predicted that truth tellers would experience more spontaneous thoughts related to their stated intentions than liars. This was predicted because intention-

related spontaneous thoughts have a functional value that is expected to be lost on liars. The results based on self-report measures support the prediction, and provide support for the proposed theoretical framework at a conceptual level. However, the subjective differences between truth tellers and liars did not result in discernable cues to deceit during interviews. Hence, the second more applied aspect of the proposed framework did not receive support. That is, strategic interviewing methods were unable to turn the differences on a conceptual level into discernable differences at an applied level. The critical question is why this was the case?

A number of potential explanations are suggested. First, although truth tellers reported experiencing more spontaneous thoughts related to their intentions than liars, liars nonetheless reported experiencing some spontaneous thoughts related to their stated intentions. Hence, the differences between truth tellers and liars may have been one of degree rather than quality. This could explain the differences on the Likert-scale self-report measure and the lack of differences in the descriptions of spontaneous thoughts reported during the interviews. Qualifying this explanation is the finding that truth tellers and liars managed to list an equal number of intention-related spontaneous thoughts (Study III, Experiment 3).

A second explanation is that the results once again highlight people's proficiency at lying. That is, even when asked an unanticipated question, such as to describe their spontaneous thoughts about a future task, liars are more than capable of providing answers that are for all intents and purposes indistinguishable from truth tellers' answers. Considering the meta-analyses highlighting the similarities between truth tellers and liars (Bond & DePaulo, 2006; Bond & DePaulo, 2008; DePaulo et al., 2003), such an explanation may have some merit. However, it is difficult to reconcile this explanation with the recent developments in strategic interviewing, demonstrating, amongst other things, the potential effectiveness of asking unanticipated questions (Vrij, 2015a).

A third explanation is that the results highlight limitations in truth tellers' abilities to accurately provide retrospective reports of their spontaneous thoughts. Research warns against the accuracy of retrospective reports of cognitive processes (Nisbett & Wilson, 1977). One cause of the reduced accuracy in recall is that many cognitive processes are not sufficiently attended to when they originally occur (Ericsson & Simon, 1980). This attention is necessary for a memory of the cognitive process to be encoded in long term memory. Without an accurate encoding in long term memory, it is unlikely that an accurate report can be provided retrospectively. In such situations, rather than reporting accurate memories of their cognitive processes, people are thought to infer their memories from other sources such as stereotypic beliefs, schemas, or their current states, resulting in memory errors (Ericsson & Simon, 1980; Pearson et al., 1992). Applied to the results from Study III, truth tellers' reports of their spontaneous thoughts may have been an example of this form of memory error. That is, if their original spontaneous thoughts were not sufficiently attended to when they occurred, they would not be available later for accurate recall. Importantly, these memory errors can occur without people's awareness (Pearson et al., 1992). Hence, although truth tellers may have believed they were recalling their memories of their spontaneous thoughts, they may in fact have been relying on stereotypic beliefs and schemas to infer their answers. It is plausible that liars also rely on such stereotypic beliefs and schemas when fabricating their answers (Colwell et al., 2007;

Köhnken, 1989; Volbert & Banse, 2014). This raises the possibility that the similarities observed between truth tellers' and liars' answers regarding spontaneous thoughts were due to both groups relying on similar cognitive resources. That is, both groups were relying on the same stereotypical beliefs and schemas to provide their answers.

The third explanation can also account for other findings on research on true and false intentions. For example, Knieps and colleagues (Knieps et al., 2013a, 2013b; Knieps, Granhag, & Vrij, 2014) consistently found that truth tellers reported experiencing more episodic future thoughts (EFTs) about their stated intentions compared to liars. However, very few differences were found between truth tellers' and liars' descriptions of their EFTs. Again, this may have been because truth tellers were inferring their answers from stereotypic beliefs or schemas, the very same beliefs and schemas that liars are likely to have used to fabricate their responses. Generally speaking, the third explanation raises important concerns about unanticipated interview techniques that rely on truth tellers being able to precisely and accurately recall memories of thoughts or cognitive processes.

## Unanticipated Questions

This thesis also sought to advance strategic interviewing techniques, specifically, the unanticipated questions approach, in conjunction with research on true and false intentions. To this end, as well as providing novel cues to deceit, the proposed theoretical framework of true and false intentions is also meant to provide themes for the development of unanticipated questions. In Study II the theme concerned the planning phase of the participants' stated intentions. Although the theme of planning was developed with true and false intentions in mind, the cues that the unanticipated questions were directed towards were more traditional. Specifically, they focused on eliciting greater differences between truth tellers and liars for statement length, within-group consistency, and between-statement consistency. The following discussion can therefore apply to the unanticipated questions approach more generally, and is not limited to intent situations.

Statement length, within-group consistency, and between-statement consistency often show little differences between truth tellers and liars when they answer anticipated questions (Granhag & Strömwall, 2002; Strömwall, Granhag, & Jonsson, 2003). In contrast, when answering unanticipated questions, on the planning that went into their intentions, greater differences are expected between truth tellers and liars (Sooniste et al., 2013; Sooniste et al., 2014). Based on these findings Study II had three hypotheses: (H1) truth tellers would have higher within-group consistency than liars, but only for the unanticipated questions (the questions on planning); (H2) truth tellers would have higher between-statement consistency than liars, but only for the unanticipated questions; and (H3) truth tellers would provide longer answers to both the anticipated and unanticipated questions; however, the differences were expected to be larger for the answers to the unanticipated questions. The results only supported the hypothesis for statement length, where differences in length between truth tellers' and liars' statements increased for the unanticipated questions. For within-group consistency, truth tellers provided more consistent answers for both anticipated and unanticipated questions. In contrast, no

differences in consistency were found between truth tellers and liars for between-statement consistency for either the anticipated or unanticipated questions.

Although these results differ from the predictions, when taken together and when examined in the light of past research, they can provide important insights into the unanticipated questions approach. The basic idea, as noted above, is to ask questions so that truth tellers can rely on their memory when answering, while liars must fabricate answers on the spot (Vrij, 2014). The present results imply that this basic account is limited for consistency cues. In addition, the results imply that attempts to elicit some cues may hinder the elicitation of other cues. For example, in Study II, open-ended unanticipated questions were necessary to elicit differences in statement length. However, open-ended questions (which allow for variation in statement length and detail) are likely to reduce within-group consistency even for truth tellers, thereby limiting its value as a cue to deceit. Such an idea implies that questions should be tailored to the cue of interest.

Based on the results from Study II, and the results from past research, I suggest templates for framing unanticipated questions in suspect interviews for the three different cues studied: statement length, within-group consistency, and between-statement consistency. An important first step is to decide whether the suspect's answers are to be specific (i.e., shorter) or open-ended (i.e., longer). By adding this dimension to the anticipated-unanticipated dimension a basic matrix can be created (Figure 3).

Figure 3. Basic framing matrix for questions in a suspect interview

	<b>Anticipated</b>	<b>Unanticipated</b>
<b>Specific</b>	<b>(A)</b> <ul style="list-style-type: none"> <li>• Short statements; veracity has no effect on statement length</li> <li>• Within-group consistency is high for both truth tellers and liars</li> </ul>	<b>(B)</b> <ul style="list-style-type: none"> <li>• Short statements; veracity has no effect on statement length</li> <li>• Within-group consistency is high for truth tellers, but low for liars</li> </ul>
<b>Open</b>	<b>(C)</b> <ul style="list-style-type: none"> <li>• Long statements; truth tellers provide somewhat longer statements than liars</li> <li>• Within-group consistency is low for both groups</li> </ul>	<b>(D)</b> <ul style="list-style-type: none"> <li>• Long statements; truth tellers provide considerably longer statements than liars</li> <li>• Within-group consistency is low for both groups</li> </ul>

For the cue statement length, a necessary requirement is that the answers can vary in length. Hence, general open questions are appropriate, quadrants C and D. It was questions of this form that were examined in Study II (i.e., open questions on intent and planning). This may explain why the unanticipated questions were most effective for the cue statement length.

For within-group consistency, however, it is more important to ask specific questions, quadrants A and B. This is because open-ended answers decrease the overlap between truth tellers' statements. This is evident by the low levels of within-group consistency of truth tellers even for the anticipated questions in Study II. For instance, in Study II (Experiment 1) truth tellers had a mean score of 2.95 on a 7-point scale, where a higher score indicates a higher degree of overlap. Answers were even less consistent for the unanticipated questions, with a mean score of just 2.10. The consistency levels were lower again for the liars. Hence, the issue was not with lowering liars' consistency, but with increasing truth tellers' consistency. I maintain that this can be better achieved with specific questions. Consider the results of an earlier study by Vrij et al. (2009). In that study, pairs of truth tellers had eaten lunch together, while pairs of liars only pretended to have done so. For anticipated questions, no differences between truth tellers' and liars' levels of within-group consistency were found. For unanticipated questions, however, large differences were found. Importantly, the unanticipated questions were highly specific (e.g., "Who finished their lunch first?"), increasing the likelihood of truth tellers' answers overlapping, and in turn keeping the within-group consistency levels high. If framed correctly, specific unanticipated questions may also be particularly difficult for liars to answer, since they cannot rely on the ambiguities allowed with everyday speech (Vrij et al., 2009). For example, when describing the size of an object, a liar could be asked to use specific measurements (e.g., meters and centimeters) rather than qualifiers and adjectives (e.g., "quite large"). The ambiguity associated with an answer such as "quite large" may conceal inconsistencies between the statements of two liars.

A final caveat when examining within-group consistency was raised in a study by Roos af Hjelmsäter, Öhman, Granhag, and Vrij (2014). Here, unanticipated questions distinguished truth tellers from liars, but only if the unanticipated questions concerned important or salient features of the event that truth tellers completed. Salience of the topic is therefore another requisite. This is because truth tellers' memories of non-salient details may be weaker, which in turn may decrease the overlap of statements (a parallel can be made to the discussion above about the difficulties in providing retrospective reports of cognitive processes). In sum, unanticipated questions targeted at within-group consistency should be specific, requiring short or closed answers, and refer to salient topics.

Between-statement consistency, the cue available from repeated interviews, poses additional issues. Based on the results from Study II (Experiment 2) the problem is less with increasing the consistency of truth tellers' statements, but more with decreasing the consistency of liars' statements. In such situations, salient, specific, unanticipated questions may still be insufficient. Even when such questions are posed, liars can simply repeat the answers they gave in prior interviews. A crucial aspect for this cue is, therefore, that the question varies across interviews in some manner. This was not the case in Study II, which may explain the comparable levels of between-statement consistency shown by truth tellers and liars. This can be contrasted with a study by Leins, Fisher, Vrij, Leal, and Mann (2011; see also Leins et al., 2012). In their study, they varied the recall mode between interviews (e.g., verbal description [anticipated] in interview one and pictorial drawing [unanticipated] in interview two). Hence, the unanticipated aspect of the question referred to the response format, rather than question content. By using an unanticipated

response format the anticipated question and the unanticipated question referred to the same theme (i.e., the layout of a room), allowing for a direct comparison between the two answers. Results from two experiments showed a classification accuracy of 70-100% when veracity judgments were based on between-statement consistency (i.e., comparing the overlap between a suspect's verbal description and sketch drawing). Whether such an approach is necessary for a more general interview template (i.e., that the anticipated and unanticipated questions must refer to the same theme) is debatable. However, based on the results from Study II, simply repeating an unanticipated question across interviews is unlikely to be sufficient in eliciting lower levels of between-statement consistency from liars.

## Limitations

A recurring theme, particularly for Study I and Study II, is the relationship between planning and intent. As noted, although intentions are often accompanied by in-depth planning, this must not be the case (Malle & Knobe, 2001). In Study I and Study II truth tellers were explicitly encouraged to plan their future actions in detail. Without such instructions it could be argued that the observed differences in truth tellers' and liars' planning behavior would not have occurred. In response to this I would claim, first, that detailed planning, as reiterated throughout, is often associated with an intention, and second, that it was precisely such situations that were of interest. That is, it was planned future actions that were the focus of the studies. The instructions were to ensure that it was such situations that were examined. It is for future research to examine situations where the need to plan the intention has been reduced or situations when intentions are not typically accompanied by in-depth plans. This would include future tasks based on habits or scripts (for a discussion on other relevant contexts see Mac Giolla et al., 2015). In such contexts it is less likely that differences between truth tellers and liars would emerge for planning behavior or on the level of intention-related spontaneous thoughts. In other words, the typical consequences of intention formation may be weaker for intentions based on habits or script like behaviors. Such situations are represented in Figure 2 by the arrow that directly connects an intention to an action, which bypasses the typical consequences of intention formation.

My response to potential criticisms of the use of a restricted definition of intent—planned single acts to be performed in the near future—is similar. Many forms of intent relevant to legal settings are excluded by this definition. However, it should only be seen as a starting point (Granhag, 2010). The breadth and scope of the term intent necessitates a certain degree of delineation. Future research should take hold of the various other forms of intent and differing contexts omitted by such restrictions (for a discussion see Mac Giolla et al., 2015). This can include more abstract intentions or intentions in the more distant future. Such intentions could for instance be relevant for judges at parole hearings assessing prisoners' statements concerning their intentions to live lawfully. Recent research has also examined statements of past intentions (Zangrossi, Agosta, Cervesato, Tessarotto, & Sartori, 2015). This research addresses the pressing question of how to determine the intentionality of a past action, a relevant issue in many court cases. Future research on true and false intentions could also examine the effect of holding



multiple or even conflicting intentions or goals—a common occurrence in everyday life (Fishbach & Ferguson, 2007).

The use of student samples, particularly in the role of mock criminals, raises additional concerns. To increase ecological validity, the instructions given to liars were derived from empirical research on suspects' counter-interrogation strategies (Clemens, Granhag, & Strömwall, 2013) and real-life resistance manuals (e.g., The Manchester Manual). Both sources emphasize the use of prepared cover-stories, which was mirrored in the design of the studies. With that said, the motivation of real criminals is difficult to reproduce in the lab. Real criminals, for instance, may be more motivated to produce in-depth cover-stories, which could affect the observed results. However, this may only provide them with better answers (e.g., more consistent or longer) to anticipated questions. Furthermore, a recent meta-analysis indicates that low motivation and the use of student samples may have less of an influence on lying behavior than once thought (Hartwig & Bond, 2014). Results showed that the detectability of lies was not influenced by participants' motivation to be believed or whether or not they were university students.

From a perspective of experimental design an important limitation of Study I and Study II is that truth tellers were asked to plan one activity (to prepare a Swedish lunch) while liars were asked to plan two (a mock-crime and a cover-story). This design was chosen to mirror real life situations where it is plausible that liars will have such a dual task, but truth tellers will not. Nonetheless, the asymmetry between tasks may be a contributing factor to the observed results. For example, liars' ability to answer questions during the interview may have been hampered because they had an additional task to plan for rather than because they were answering questions on a false intention. Mitigating this issue is the finding that participants were generally satisfied with the time they had to plan their tasks. Furthermore, the instructions for the liars' mock-crime were very exact, limiting the need for extensive planning. This was not an issue for Study III since truth tellers and liars planned an equal number of future tasks.

## Future Directions and Opportunities

Individual differences are relatively understudied in deception detection research (Vrij, 2008). This is partly justified, as individual differences in lie detection ability are negligible (Bond & DePaulo, 2008). With that said, non-trivial differences exist regarding credibility—some people are simply more believable regardless if they are telling the truth or not (Bond & DePaulo, 2008). From the perspective of true and false intentions certain individual differences could have particular influence on people's statements. For example, people differ in their ability to pursue goals (Latham, Ganegoda, & Locke, 2011). This includes tendencies to set, commit to, and plan for goals. Those with a true intention who are poor at goal-pursuit may show fewer or weaker markers of active goals, and hence may provide answers more similar to an average liar. By attending to such individual differences deception detection methods may be more sensitive on a case by case basis.

Regarding strategic interviewing approaches more generally, scholars have warned that, despite some promising results, few of the extant studies address the underlying cognitive mechanisms of the interview methods examined (Blandón-Gitlin,

Fenn, Masip, & Yoo, 2014; Walczyk, Igou, Dixon, & Tcholakian, 2013). They highlight, for instance, how basic research on memory, neuroimaging, and information management can give a more solid foundation to interviewing strategies such as the unanticipated questions approach. The current studies did not address these underlying cognitive mechanisms. However, by rooting the proposed theoretical framework in basic research on intentions and related fields such as goals, planning and spontaneous thoughts, much research already exists that can help uncover the specific cognitive mechanisms at play. For a greater understanding of the potential advantages and limitations of the cognitive approach to deception it is vital that future research takes hold of this issue.

A final area worthy of note for future research is the issue of distinguishing between genuine and false threats. Although a great deal of research exists on threat assessment (Meloy & Hoffmann, 2013), this has primarily focused on the behavior and risk factors associated with the person who threatens. Instead, applying the research of true and false intentions to a threat situation would change the focus to the stated threat itself, where the aim is to determine if the threat is genuine or a bluff. The value of being able to distinguish between a true threat and bluff cannot be overstated. It has obvious bearing in security operations, but also in areas less directly associated with the legal setting. For example, in the UK, hoax calls cost emergency services millions of pounds each year (Nugent & Sidders, 2008). The first experimental studies on distinguishing between true and false threats have already begun (Geurts, Granhag, Ask, & Vrij, in press). More will be needed in order to reap the practical benefits this research has the potential to provide.

## Ethical Considerations

The ethics of the current studies can be considered on at least two levels. The first is the level of the experiment, particularly the welfare of the participants involved in the study. The second is at the societal level; what implications the research can have on society at large. These issues can be independent of each other. That is, some research can raise concerns at the participant level, but be ethically sound at the societal level. In contrast, some research can be ethically sound at the participant level, but have questionable agendas at the societal level.

At the level of the experiment, half of the participants believed they were to perform a mock-crime and were required to lie in interviews. To combat these issues participants were told that all individuals they would meet throughout the study (e.g., shop personnel) were aware that it was a mock-crime. In addition, no participant actually performed the mock-crime; they were all interrupted before they could carry out their intentions. With regards to the act of lying, some participants may have been hesitant to engage in something that many consider morally wrong. To resolve this issue, participants were reassured that they could leave the studies at any time and still receive their compensation.

The thesis also raises concerns at the broader societal level. As alluded to in the introduction, these concerns surround the issue of penalizing an action that has yet to be performed. This thorny issue has received attention from legal scholars, who for example, highlight the tension between the more traditional ethos of criminal investigations

concerning crimes that have already occurred with the more preventative nature of counter-terrorism or security work (McCulloch & Pickering, 2009). The tension arises because the focus on crime-prevention is at odds with the principles of due process and the presumption of innocence, which build on the assumption that a crime has been committed (McCulloch & Pickering, 2009). One potential way to mitigate this issue is to see the applied value of research on true and false intentions at the early stage of an investigative process. That is, lie-detection techniques on true and false intentions may be more appropriate in an initial screening phase, which can help guide investigators attention and allocation of resources, rather than as a tool for providing evidence in court proceedings. A second argument, already raised in the introduction, is one of pragmatics. That is, regardless of whether research on true and false intentions is carried out, professionals must continue to make veracity judgements about people's stated intentions. Without scientific research on the topic it cannot be known whether the methods professionals use to make such veracity judgements are valid or not.

### Concluding Remarks

Since Granhag's (2010) call to focus on true and false intentions the literature on the topic has grown steadily. It now includes over 20 experimental studies and at least five PhD theses (Clemens, 2013; Knieps, 2013; Sooniste, 2015; Wallace, 2013; Warmelink, 2012). The primary aim of the current thesis was to put forward a theoretical framework that can parsimoniously capture this research while at the same time generate new hypotheses for intention-specific lie detection techniques. This framework is rooted in a cognitive approach to lie detection, with a focus on verbal cues, that avails of the recent developments in strategic interviewing. With that said, with a specific focus on intentions and goals, the proposed theoretical framework can be distinguished from previous work, and thereby make a unique contribution to deception theory.

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