Competence, Styles, and Quality in Everyday Decision Making

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ABSTRACT


This thesis had three aims. First, it explored the benefits of expanding the existing cognitively-oriented definition of individual differences in decision-making competence (i.e., measured by performance on traditional decision -making tasks) by including decision -related aspects of social skills and time -approach. Second, it investigated how an objective and normatively defined indicator for real -life decision-making outcome(s) relate to other, subjective indicators. Third, it examined if decision-making styles relate to individual characteristics in terms of social skills and time-approach.

Study 1 used questionnaires and included three sub-studies. Study 1.1 targeted a community sample, and Study 1.2 and Study 1.3 examined two samples of professionals (Study 1.2 – police investigators; Study 1.3 – social workers). Study 1.1 explored how an objective and normative indicator for decision-making outcome (the Decision Outcome Inventory: DOI) relates to subjective indicators (measured by satisfaction with life and experiences of daily hassles). Study 1.2 and Study 1.3 explored how decision-making competence measured by cognitively-oriented skills (the Decision-Making Competence scale: DMC), social skills/competence (self-monitoring ability and trait emotional intelligence), and time-approach (time-styles and procrastination behavior) respectively predict subjective and objective indicators of outcomes. The results showed that objective and subjective outcome indicators were related. Furthermore, DMC performance did not predict the variance in outcomes. However, competence in terms of social skills and time-approach were significant predictors for the variance in outcomes.

Study 2 further explored the predictive validity of the three competence factors in Study 1 by investigating if individual differences in these skills explain decision-making outcome indicated in terms of perceived stress. Study 2 included two sub-studies. Study 2.1 used a university student sample and Study 2.2 used the same sample of police investigators as in Study 1.2. Except for the different outcome measure used, the materials and procedure of Study 2 were largely the same as in Study 1. Results confirmed the findings of Study 1 by demonstrating that DMC performance did not predict levels of perceived stress, but social skills/competence and time-approach did.

Study 3 used the same samples, materials and procedure as Study 2 but analyzed the relationship between social skills/competence, time-approach and reports of decision-making styles. Results showed that styles reflecting if and when decisions are made (i.e., the Avoidant and Dependent styles) were related to, and could to some extent be explained by, social skills and time-approach. However, only weak relationships were observed between social skills and time-approach and the styles that reflect how decisions are made (i.e., the Rational, Intuitive and Spontaneous styles).

In total, the results from the three studies demonstrate the importance of attending to social skills and time-approach in order to gain a better understanding of individual differences in decision making. The results demonstrate the benefits of using multi-faceted criteria for evaluating decision quality.

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List of Appended Papers


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Sammanfattning på svenska (Swedish summary)


I avhandling undersöks tre frågeställningar. Den första frågan är om en existerande, kognitivt orienterad definition av beslutskompetens med fördel kan utvidgas genom att inkludera beslutsrelaterade aspekter av social förmåga och förhållningssätt till tid (Studie 1-2). Den andra frågan är om en objektivt definierad indikator för utfall av personers vardagliga beslutsfattande är relaterad till subjektivt definierade utfall av vardagligt beslutsfattande (Studie 1). Den tredje frågan är om skillnader i hur personer vanligtvis, och fördragsvis, hanterar sitt beslutsfattande är relaterade till skillnader i social förmåga och förhållningssätt till tid (Studie 3).


**Studie 1** bestod av tre studier. I Studie 1.1 fick deltagare i ett befolkningsrepresenterativt stickprov besvara olika skalor och mått som indikerade objektiva och subjektiva indikatorer för utfall av beslutsfattande. Deltagarna fick rapportera i vilken utsträckning som de hade upplevt vardagliga bekymrer i olika områden i livet den senaste månaden, i vilken utsträckning de bedömer sig vara tillfreds med livet och anser sig att hittills lyckats nå sina mål i stort, samt besvara frågor om konkreta erfarenheter som de har haft under de senaste tio åren. Vardagliga bekymrer och tillfredsställelse avsågs mäta indikatorer på subjektiva konsekvenser av beslutsfattande och rapportering av konkreta erfarenheter avsågs att ge ett objektivt mått på förmågan att kunna undvika konsekvenser av beslutsfattande. Resultatet visade att personer som lyckats undvika negativa konsekvenser också rapporterade färre vardagliga bekymrer. Personer som rapporterade att ha upplevt fler vardagliga bekymrer uppgav också lägre nivåer av välbefinnande i livet i stort. Däremot återfanns inget signifikant samband mellan nivåer av välbefinnande och erfarenheter av negativa konsekvenser.
Studie 1.2 vände sig till yrkesverksamma personer (polisutredare). Deltagarna fick besvara ett testbatteri med mått och skalar på kognitivt orientoerad beslutskompetens (DMC), social förmåga (social medvetenhet/självpresentation och emotionell intelligens), samt förhållningssätt till tid (hur man ser på, hanterar och känner inför tid och tidsrelaterade aktiviteter). Deltagarna rapporterade också i vilken utsträckning de upplevt vardagliga bekymmer och besvara frågor om välbefinnande. Resultaten visade att kognitivt orienterad beslutskompetens inte kunde förklara utfallet av vardagliga bekymmer eller välbefinnande. Däremot visade resultaten att både social och tidsorienterad beslutskompetens kunde förklara utfall av både vardagliga bekymmer och välbefinnande.

I Studie 1.3 bestod deltagarna också av yrkesverksamma personer (socialsekreterare). Studie 1.3 innehöll samma mått och skalar som i Studie 1.2, men här fick deltagarna också besvara i vilken utsträckning man lyckats undvika objektivt definierade, negativa konsekvenser av sitt beslutsfattande. Resultatet av Studie 1.3 bekräftade i stort resultatet från Studie 1.1. I Studie 1.3 erhölls dock ett signifikant samband mellan rapporterat välbefinnande och att ha lyckats undvika negativa konsekvenser av sitt beslutsfattande. Resultatet av Studie 1.3 visade återigen att kognitivt orienterad beslutskompetens inte förklarade utfallet i något av de inkluderade utfallsmåten. Samtidigt bekräftades resultatet från Studie 1.2 då både socialt och tidsorienterad beslutskompetens förklarade utfallet i samtliga tre utfallsmått.

Studie 2 undersökte om och i vilken utsträckning som de tre aspekterna av beslutskompetens (kognitivt-, socialt-, och tidsorienterad) kunde förklara andra utfall av beslutsfattande än de som studerades i Studie 1. I Studie 2 fungerade mått på upplevd stress som indikation på subjektiva konsekvenser av beslutsfattande. Studie 2 bestod av två studier. Deltagarna i Studie 2.1 var universitetsstudenter och i Studie 2.2 samma yrkesverksamma deltagare (polisutredare) som i Studie 1.2. Utöver att deltagarna fick besvara en skala som mäter upplevd stress så var material och procedur i huvudsak det samma som för Studie 1.2 och 1.3. Resultaten för Studie 2 visade på att kognitivt orientoerad beslutskompetens inte bidrog till att förklara utfall av beslutsfattande i termen av upplevd stress. Däremot visade resultatet att både socialt och tidsorienterad beslutskompetens bidrog till att förklara upplevd stress. Dessa övertvåpande resultat återfanns i både Studie 2.1 och Studie 2.2.

Studie 3 undersökte hur beslutsstilar är relaterade till social förmåga/kompetens och förhållningssätt till tid. Studie 3 bestod av två studier. I Studie 3.1 deltog samma deltagare som i Studie 2.1 (universitetsstudenter) och deltagarna i Studie 2.2 var samma yrkesverksamma deltagare som i Studie 1.2 och 2.2. Analyserna i Studie 3 utgick således från samma mätningar av sociala förmågor och förhållningssätt till tid, men relaterade dessa till deltagarnas rapportering av beslutsstilar. Resultatet visade att skillnader i social förmåga/social karaktär och tidshantering är relaterade till beslutsstilar. Detta var särskilt tydligt för de beslutsstilar som reflekterar om och när beslut fattas (Beroende respektive Undvikande beslutsstil). Resultatet gav också ett visst stöd för att skillnader i social förmåga/social karaktär och förhållningssätt till tid kan bidra till att förklara särskiljandet mellan dessa bågge beslutsstilar. Sett över de två studierna så återfanns däremot endast svaga och sporadiska samband mellan social förmåga/kompetens och förhållningssätt till tid i...
relation till de stilar som reflekterar hur beslut fattas (Rationell, Intuitiv och Spontan beslutsstil).

Sammantaget visar resultaten från avhandlingens tre studier att beslutsrelaterade aspekter av social förmåga och tidshantering är viktiga att inkludera för att förstå individuella skillnader i beslutsfattande. Mer specifikt visar resultaten från två av avhandlingens studier (Studie 1-2) att den existerande, kognitivt orienterade definitionen av beslutskompetens inte bidrog till att förklara subjektiva konsekvenser av beslutsfattande. Med andra ord, skillnader i förmågan att kunna fatta normativt korrekta och konsistenta beslut verkar inte nödvändigtvis ha betydelse för subjektiva indikatorer av beslutsfattande i form av vardagliga bekymmer, välbefinnande eller upplevd stressnivå. I Studie 1.3 kunde inte heller den tidigare rapporterade relationen mellan kognitivt orienterad beslutskompetens och objektivt definierade utfall av beslutsfattande replikeras. Samtidigt visar resultaten från samma två studier (Studie 1-2) att skillnader i förmågan att kunna anpassa beslutsprocesser utifrån skiftande sociala krav bidrar till att förklara utfall av beslutsfattande. På samma sätt visar resultaten att skillnader i hur personer ser på, hanterar och känner inför tid också bidrar till att förklara utfall av beslutsfattande.

För att återknyta till avhandlingens tre huvudfrågor så visar resultaten av avhandlingens tre studier att en definition av beslutskompetens med fördel bör inkludera beslutsrelaterade aspekter av social förmåga och förhållningssätt till tid. Vidare så visar resultaten på en relation mellan objektivt definierade utfall av beslutsfattande och subjektiva konsekvenser av beslutsfattande. Detta åskådliggör att beslutskvalitet kan, eller bör, utforskas mångfasätterat. Slutligen, aspekter av skillnader i socialt och tidsmässigt förhållningssätt är i viss utsträckning relaterade till skillnader i beslutsstil.
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Introduction

“Life is the sum of all your choices” – Albert Camus

Life consists of an endless number of decisions, from minor decisions like what to have for dinner to major decisions like what career to pursue or where to live. Major or minor, the decisions people make will affect their lives and, ever so often, also the lives of others (e.g., family, colleagues). Hence, being able to make good decisions is essential. The goal of behavioral decision-making science is to examine what decisions people make, investigate how these decisions are made, and ultimately to provide recommendations in order to reduce gaps between ideal and actual decisions (Baron, 2012; Fischhoff, 2010; Milkman, Chugh & Bazerman, 2009). In the last decade, research has begun to explore the factors and individual difference variables that characterize a successful decision-maker. This research has mainly focused on decision-making competence and decision-making styles. In brief, research on decision-making competence has found that the skills measured by traditional decision-making tasks seem to comprehend abilities of direct importance for individuals’ real-life decision-making outcomes (Bruine de Bruin, Parker & Fischhoff, 2007; Parker & Fischhoff, 2005; see also Bruine de Bruin, Del Missier & Levin, 2012). Furthermore, research on decision-making styles has demonstrated that how people prefer to approach decision making (i.e., style) also holds predictive validity for different indicators of decision-making outcomes and success (e.g., Dewberry, Juanchich & Narendran, 2013a; Parker, Bruine de Bruin & Fischhoff, 2007).

Considering the immense importance of good decision making, these results show great promise for research to specify recommendations and prescriptions aimed at improving people’s decision making (Bruine de Bruin, 2013; Wallin, 2013). However, it is relevant to consider to what extent the reported external validity holds true for various indicators of peoples’ everyday understanding and experience of decision-making success. Furthermore, due to the complexity of everyday life, it is also relevant to investigate if there are aspects of competence that can provide further explanation of the variances in success.

This thesis is based on the insights from previous research on decision-making competence and decision-making styles and aims to complement and develop these important lines of research. The thesis targets three key issues.
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This thesis is based on the insights from previous research on decision-making competence and decision-making styles and aims to complement and develop these important lines of research. The thesis targets three key issues. First, the thesis takes a somewhat broader
approach to decision-making competence than previous research by acknowledging that
decision-making efficiency often depends on social concerns and temporal aspects. Second, in
this context, the thesis explores and discusses the issue of adequate criteria for evaluating
decision quality. Concisely stated, a basic assumption in this research is that when criteria for
real-life decision-making outcomes are defined, subjective experiences of decisions and
outcomes should not be neglected (Higgins, 2000; Keys & Schwartz, 2007; Wood &
Highhouse, 2014). Third, the thesis investigates how attending to personal characteristics in
terms of social orientation and time-approach can help to understand why individuals prefer to
approach decision making in certain ways.

Demands on everyday decision making

Decision-making demands have increased in recent decades, especially in Western societies
(Schwarz, 2004). For example, many decisions are associated with a larger number of
decision alternatives (i.e., choice overload), a development that in turn may have negative
effects on people’s satisfaction with their decisions (Inbar, Botti & Hanko, 2011; Roets,
Schwartz & Guan, 2012; Schwartz et al., 2002; however, see Scheibehenne, Greifender &
Todd, 2010). Similarly, people face a growing need to switch perspectives in their decision
making. For example, to shift focus between self-interest and the collective best, a process
that has been demonstrated to reduce subjective decision-confidence (Hamilton, Vohs, Sellier
& Meyvis, 2011).

A perhaps even more serious concern in everyday decision making is the fact that nearly
every decision is potentially subject to evaluations and judgments by others (e.g., family,
colleagues, social media, and investigative journalism). Increased work demands and
complexity have also been observed in working-life decision making. This is exemplified by
the increased lack of control over work, insufficient feedback on performance, high job
uncertainty, and cumulative expectations that employees adapt to changing work conditions
(Mark & Smith, 2008).

The argument in this thesis is that this increase in demands means decision-makers must be
able to make decisions that are sensitive to, and respond to, accountability pressure (Green,
Visser & Tetlock, 2000; Keren & Bruine de Bruin, 2003; Lerner & Tetlock, 1999; Tetlock,
1985). Consequently, a fundamental assumption in this thesis is that a valid, comprehensive
and applicable definition of decision-making competence should explain people’s ability to respond to these everyday decision-making demands.

The complexity and social nature of everyday decision making

Day-to-day decision making is diverse in nature and importance. Yet an essential feature of many real-life decisions is that they are made in complex social settings in which decision-makers often require information and/or approval from other people in order to be successful (Allwood & Hedelin, 2005; Lerner & Tetlock, 1999). It has also been argued that efficient decision making requires the ability to adapt decision-making processes in accordance with changing demands in the social environment (Frith & Singer, 2008; Rilling & Sanfey, 2011; Sanfey, 2007; Tetlock, 1985, 2002).

In line with this argument, it has been proposed that a competent decision-maker has to think about how others think (i.e., metacognition-others) and be able to process information, update and adapt decision goals accordingly (Smith, Shanteau & Johnson, 2004). Moreover, everyday decision making often requires the integration of different sources of information, of which social cues are one (Averbeck & Duchaine, 2009). One suggestion is that the ability to correctly attend to social cues affects decision-making performance (Ramsøy, Skov, Macoveanu, Siebner & Fosgaard, 2014; Telle, Senior & Butler, 2011).

Furthermore, most decisions relate to time. For instance, some decisions are best made immediately whereas other decisions may benefit from delay. Previous research highlights time as a fundamental dimension in people’s decision making (e.g., see Loewenstein, Read & Baumeister, 2003). More specifically, the most crucial factor of time for in individuals’ decision making has been proposed to be how time is perceived (e.g., Claessens, van Erde, Rutte & Roe, 2007; Stratham, Gleicher, Boninger & Edwards, 1994; Usunier & Valette-Florence, 2007; Wittman & Paulus, 2007; Zimbardo & Boyd, 1999). In everyday life, decision-making processes often stretches over long time periods. Therefore, having an appropriate perception of time (e.g., an accurate sense of the duration of time) and having a structured disposition towards the management and overall use of time (e.g., to start, plan and execute activities effectively) may likely affect decision quality and decision-making success.
Aim of the Thesis

The main purpose of this thesis is to increase our understanding of the factors and variables that contribute to positive decision-making outcomes in peoples’ everyday lives including their work lives. The emerging research field in decision-making science specifically dedicated to decision-making competence inspired this thesis (Bruine de Bruin et al., 2012). Previous research on decision-making competence has specifically explored how individual differences in the skills measured by traditional decision-making tasks (i.e., mostly cognitive skills) relate to people’s real-life decisions (Bruine de Bruin et al., 2007). At the same time, it has been suggested that explorations of decision-making competence provide insights into which cognitive and non-cognitive processes contribute to decision-making ability and to positive, real-life decision outcomes (Bruine de Bruin et al., 2012). However, as described in more detail below, it may be argued that the prevailing definitions of decision-making competence and real-life decision-making outcomes are somewhat limited. Decision-making competence has mainly been defined by performance on tasks derived from traditional decision-making research; real-life decision-making outcomes have mainly been defined objectively and by taking a normative approach (Bruine de Bruin et al., 2007; Parker & Fischhoff, 2005).

Recently, however, decision-making competence research has begun to acknowledge explicitly that competence not only depends on cognitive abilities but also on affective skills and experience (Bruine de Bruin, Parker, & Strough, 2014; see also Strough, Parker & Bruine de Bruin, 2015). Thus, in line with these recent developments in research, the aim of the three studies of this thesis is to complement previous research by exploring the benefits of taking a broader approach to decision-making competence. This exploration focuses on the predictive power of factors, other than basic cognitive abilities, that are likely to contribute to the success of people’s everyday decision making. Specifically, the claim in this thesis is that decision-related aspects of social skills/competence and time-approach should be included in a broader concept of decision-making competence.

A brief account of decision-making research is presented next, followed by a description of the specific research field dedicated to decision-making competence. Thereafter, a description of an existing measure of decision-making competence is presented. This description is complemented by a brief summary of the research that has reported relationships between this
measure and various outcomes. Then, a selective overview of the research on decision-making styles is given that mainly addresses suggestions of how stylistic differences can be explained as well as reports on the relationships of these differences. In the next section the issue of decision quality is discussed, focusing on the difficulties of establishing criteria for real-life decision making. Thereafter, the theoretical basis and relevance of incorporating social skills and time-approach to the definition of decision-making competence is proposed and argued for. Finally, summaries of the three empirical studies in the thesis are presented and a general discussion follows.

Decision-making Research

Early research on decision making primarily evolved from the assumption that normative models should (and could) be used to evaluate decisions. These normative models were formulated in terms of expected utility, assuming that people are able to make rational decisions, whereby they comprehensively consider different decision-alternatives in terms of probabilities (expectations) and values (utilities), ultimately resulting in optimal outcomes (Loewenstein, 2001; Shafir & LeBoeuf, 2002). However, the basic assumptions of expected utility theory have been questioned and repeatedly refuted by a vast amount of research. For example, research in the heuristic and biases program has persuasively demonstrated that these assumptions are often unfulfilled (Gilovich, Griffin & Kahneman, 2002).

To illustrate, expected utility theory assumes that people have access to all relevant information in order to make rational decisions. The theory also assumes that people’s preferences are fixed and clearly defined. Yet research has shown that these assumptions are generally inadequate as preferences are constructed (Bettman, Luce & Payne, 1998), changing (Fischhoff, Slovic & Lichtenstein, 1980), miss predicted (Hsee & Hastie, 2006) or unknown (Kahneman, Wakker & Sarin, 1997).

In brief, numerous studies have demonstrated that decisions frequently deviate from normative standards in various ways because of people’s limited capacity to process information or due to a reliance on various inferential shortcuts and other types of cognitive biases (Gilovich et al., 2002; Kahneman & Tversky, 2002). Additionally, in recent decades researchers have demonstrated that affect can have heuristic influence on judgments and decisions in much the same way (Slovic, Finuance, Peters & McGregor, 2002). However, even though it has been demonstrated that both cognitive shortcuts and affective cues often
have problematic effects on people’s decision making, it has also been demonstrated that
decisions based on such heuristics may sometimes be beneficial, preferable or even essential
(Bechara & Damasio, 2005; Gigerenzer & Gaissmaier, 2011; Mikels, Maglio, Reed &
Kaplowitz, 2011).

**Decision-making Competence**

In the complexity of everyday life, people often find themselves in decision situations where
they lack prior experience (Smith et al., 2004). When facing such novel decisions, it has been
argued that individuals’ success depends on a general decision-making ability of being
capable to attend to the relevant information, to apply appropriate values in the decision
context, and to assimilate information and values with adequate decision-rules (Parker &
Fischhoff, 2005). Furthermore, in such situations, it has been proposed and reported that
people who are able to make decisions according to normative standards of rationality
generally will make better decisions, and consequently achieve more positive outcomes than
people who do not follow these standards (Bruine de Bruin, 2012; Bruine de Bruin et al.,
2007; Fischhoff, 2010). The question then is: Can individual differences in this ability be
measured?

Initially, researchers explored individual performance on various traditional decision-making
tasks. The results of these studies revealed internal consistency and inter-correlations. That is,
individual differences in the departure from normative standards suggested rather consistent
deficiencies in performance on decision-making tasks such as under/overconfidence and
hindsight bias (Stanovich & West, 2000). Moreover, the results also showed that individual
differences in performance were partly differentiated from general intelligence and cognitive
ability. In sum, these results were interpreted as illustrating that individual differences in
decision-making ability constitute a “positive manifold” (Stanovich & West, 2000; see also
Stanovich & West, 2008). As a consequence, this research helped pave the way for behavioral
decision-making research to exit the laboratory and to respond to criticism that questioned the
relevance of these individual differences (e.g., Gigerenzer & Goldstein, 1996) by exploring
external and predictive validity.
Measuring decision-making competence

Based on a normative approach to decision making, it has been proposed that general decision-making ability depends on four fundamental skills: consistency in belief assessment (be able to judge the likelihood of outcomes), consistency in value assessment (evaluating outcomes), information integration (combining belief and value assessments in decisions) and metacognition (knowing the extent of one’s abilities) (Bruine de Bruin et al., 2007; Del Missier, Mäntylä & Bruine de Bruin, 2012).

Building on the research on consistent individual performance differences in decision-making tasks (e.g., Stanovich & West, 2000), Parker and Fischhoff (2005) and Bruine de Bruin et al. (2007) developed and validated a measure of individual differences in decision-making competence; the Decision-Making Competence scale, abbreviated as DMC. The scale uses well-studied tasks from the traditional decision-making literature considered to adhere to different aspects of the decision-making process and to correspond to normative definitions of decision-making skills.

The DMC scale was developed in two studies. In the first study, Parker and Fischhoff (2005) targeted adolescents (all male) within an on-going longitudinal study on adolescents and risk-behavior (the Youth Decision-Making Competence scale, Y-DMC). They found a correlative relationship between DMC performance and cognitive ability, as well as between DMC performance and indicators of real-life outcomes (i.e., risk-behavior). However, because of limitations in this study (e.g., a restricted and non-randomized sample as well as issues of low reliability scores for some DMC components), Bruine de Bruin et al. (2007) conducted a second study that developed the DMC scale so it could be used with adults (the Adult Decision-Making Competence scale; A-DMC; henceforth referred to as DMC in this thesis).

The DMC consists of the following six components.1 The component (a) Resistance to Framing (RF) measures consistency as observed in two sets of framing tasks: attribute framing tasks and risky-choice framing tasks. Attribute framing tasks consist of positive and negative accounts of seven normatively corresponding events, whereas risky-choice framing

1 The DMC initially included a seventh component – Path-Independence – that was intended to measure consistency in choices between gambles. However, this component, which was established as unrelated to the initial six DMC components, did not contribute to the DMC score (Bruine de Bruin et al., 2007). Hence, subsequent research on the DMC has not included this seventh component.
tasks have gain and loss descriptions of decision problems. Both the attribute framing tasks and the risky-choice framing tasks are presented repeatedly by seven descriptions in two frames (positive/negative and sure-thing option/risky-choice option). The component (b) *Applying Decision Rules* (ADR) measures how individuals are able to follow decision rules of various complexities. Participants are asked to apply the preferences of hypothetical consumers by choosing among descriptions of DVD players that differ according to feature ratings. The component (c) *Consistency in Risk Perception* (CRP) measures the ability of assessing probability correctly. Participants assess the probability that ten events will happen to them (no chance 0% - certainty 100%) in two time periods (the next year and the next five years). Correct probability assessments for the next year should not be larger than the probability assessments for the next five years. Additionally, some item pairs nest subsets vs. supersets or compliance probability judgments (e.g., the probability to get in to a car-accident while driving and that your driving will be accident-free). Responses to these item pairs are scored as correct if their combined probability equals 100%. The component (d) *Under-/Overconfidence* (UOC) measures the ability to recognize the extent of one’s knowledge. Participants consecutively judge the correctness (true/false) of 34 statements and, for each statement, evaluate how confident they are of their answer (on a scale from just guessing, 50%, to absolutely certainty, 100%). The component (e) *Resistance to Sunk Costs* (RSC) deals with the ability to ignore prior investments (in terms of costs or efforts). For this component, after reading fictitious scenarios of everyday events, the participants indicate (among two alternatives) how they would deal with the situation. They answer on a scale of 1-6, where 1 represents the sunk cost option and 6 the normatively correct option. The component (f) *Recognizing Social Norms* (RSN) measures the ability to assess social norms. Participants first indicate whether they think “it is sometimes OK” to engage in 16 adverse behaviors (e.g., not returning something that you have borrowed). Later, participants are asked to estimate how many people (“out of 100 people your age”) that would approve of each behavior previously assessed. The first assessments, which are converted into a percentage for each behavior (the percentage of participants who approved each behavior), then function as the answer keys for comparisons to subsequent estimations (by rank order correlation).

Bruine de Bruin et al.’s (2007) results demonstrated internal consistency as well as reliability in terms of test-retest ($r = .44 -.77$, $p < .001$) for individual performance on the DMC.
components. They interpreted these results as providing additional support for the assumption that performance on traditional decision-making tasks reflects consistent individual differences. Moreover, and central to the claims in this thesis, the results showed that DMC performance is related to the experiences of real-world decision outcomes (as measured by a self-report scale, the Decision Outcome Inventory, DOI; this scale is described and discussed in more detail below). In sum, Bruine de Bruin et al. concluded that the DMC measures specific decision-making skills because DMC performance predicted real-world decision-making outcomes even after controlling for cognitive ability and socio-economic status.

**Research on decision-making competence**

By expanding the insights provided from the initial research by Parker and Fischhoff (2005) and Bruine de Bruin et al. (2007), subsequent research has demonstrated that individual differences in DMC are related to a number of factors. These include variations in *maximizing* tendencies (Parker, Bruine de Bruin & Fischhoff, 2007), decision-making ability in leaders (Carnevale, Inbar & Lerner, 2011), and cognitive ability, executive functions and numeracy (Del Missier et al., 2012). Furthermore, researchers have found that the DMC has predictive validity for self-reported, real-life behavior in preadolescents (Weller, Levin, Rose & Bossard, 2012; Weller, Moholy, Bossard & Levin, 2014), for domain-specific risk attitudes (Weller, Ceschi & Randolph, 2015), and helps to understand age differences in decision-making ability (Bruine de Bruin, Parker & Fischhoff, 2012; Bruine de Bruin et al., 2014; Strough, Bruine de Bruin & Peters, 2015; Strough et al., 2015). Additionally, research has also reported that decision education can improve decision-making competence (Jacobson et al., 2012). Based on these results, researchers have suggested that DMC research can be the base for recommendations and development of interventions intended to improve people’s individuals’ decision making (Bruine de Bruin, 2012; Wallin, 2013).

Other tools can also measure aspects of individual decision-making ability (e.g., Cokely, Galesic, Schulz, Ghazal & Garcia-Retamero, 2012; Finucane & Gullion, 2010; Frederick, 2005). However for *general* decision-making ability, a common claim is that the DMC scale has the most promise (e.g., Appelt, Milch, Handgraaf & Weber, 2011; Campitelli & Gobet, 2010).
Decision-Making Styles

In addition to the research on individual differences in decision-making performance (i.e., competence), researchers have also investigated the importance of how people approach decision-making (i.e., variations in decision-making styles) when explaining differences in outcomes and success. Whereas measures of competence (e.g., the DMC) focus on accuracy and consistency in decision-making, measures of style focus on how people usually and preferably approach and handle decision making (based on their self-reports). Decision-making styles are often referred to as a dimension of the more general construct cognitive style (Kozhevnikov, 2007). It has also been noted that the differences between cognitive styles and decision-making styles are not very significant (Riding & Chema, 1994).

In brief, research on decision-making styles is diverse and includes a number of different definitions and measures. Because of these inconsistencies, researchers have called for a more theoretical and systematic understanding of individual differences in styles (Appelt et al., 2011). Heeding this call, researchers have explored the latent structure of decision-making styles (Dewberry, Juanchich & Narendran, 2013b) as well as how styles relates to age and gender (Delaney, Strough, Parker & Bruine de Bruin, 2015). Although such explorations contribute to the understanding of individual differences in styles, more research is needed to fully respond to the needs articulated by Appelt et al.

Measuring decision-making styles

In response to the diversity of definitions and measures related to decision-making styles, Scott and Bruce (1995) developed a measure based on the existing theoretical definitions of decision-making styles: the General Decision-Making Style inventory (GDMS). In developing and assessing their new measure, Scott and Bruce proposed five styles: Rational, Intuitive, Spontaneous, Avoidant and Dependent. These five styles were argued to capture most of the specific characteristics of individual differences in approaching and managing decision making.

People who report a high preference for the Rational style rely on extensive information-collection and a pronounced tendency to consider different alternatives when they make decisions. In contrast, people who report a preference for the Intuitive style pay attention to specific details, rely on feelings and hunches, and take a trial and error approach in decision making. People who prefer the Spontaneous style tend to make decisions quickly, on the spur...
of the moment. More complexity is involved in both the Avoidant and the Dependent styles. People high in the Avoidant style tend to avoid making decisions whereas people high in the Dependent style tend to ask for advice from others and/or even to shift responsibility for decisions to others.

Researchers have frequently used the GDMS and its reliability (Raffaldi, Iannello, Vittani & Antonietti, 2012) as well as validity (Loo, 2000; Curseu & Shruijer, 2012) have been confirmed.

**Research on decision-making styles**

A vast amount of research reveals that individual differences in decision-making styles affect various aspects of decision success and quality. For example, styles have been related to: decision-making competence (Bruine de Bruin et al., 2007); personality (Dewberry et al., 2013a); decision-making success, maximizing tendencies and post-decisional regret (Parker et al., 2007); depression and decisional self-esteem (Leykin & DeRubeis, 2010); stress (Salo & Allwood, 2011; Thunholm, 2008); value orientation (Loo, 2000); real-life decisions (Galotti, 1999); decision conceptualization and goal setting (Galotti, 2006); and evaluations of overall decision quality by self and others (Wood & Highhouse, 2014). In general, the Rational and the Intuitive styles are reported to be the most constructive styles because of their association with more positive outcomes, decision-making efficiency and fewer negative consequences. In contrast, the Avoidant, Dependent, and to some extent also the Spontaneous style, have been reported to be more maladaptive because of their association with adverse behavior and negative outcomes.

**Explaining individual differences in decision-making styles**

As this summary of the literature shows, it is well-documented that people differ in how they usually and preferably approach decision making. It is also well-documented that these differences affect various aspects of decision-making success and outcome. However, the theoretical understanding of stylistic differences is unclear (e.g., Appelt et al., 2011; Kozhevnikov, 2007). Some researchers argue that stylistic differences can be understood primarily by the amount of information gathered and analyzed (see, e.g., Leonard et al., 1999; Riding, 1997). Other researchers suggest stylistic differences are best understood by attending to analytical (i.e., the Rational style) and intuitive (i.e., the Intuitive style) thinking and
information processing (Pacini & Epstein, 1999). A suggestion related to this dualistic perspective is that stylistic differences can be explained by cognitive preconditions (e.g., working-memory capacity) and preferences by experience (Fletcher, Marks & Hine, 2011). The GDMS definition of styles is broader. For example, Scott and Bruce (1995) defined decision-making styles as individual differences that cannot be understood simply in terms of analytical thinking (i.e., the Rational style) or of intuitive thinking (i.e., the Intuitive style). Instead, Scott and Bruce acknowledged that people’s approach to decision making is more complex (i.e., the Spontaneous, the Avoidant and the Dependent styles are also included).

However, it has been argued that an even more inclusive perspective (see, e.g., Leykin & DeRubeis, 2011; Thunholm, 2004) could (and should) enhance the understanding of individual differences in decision-making styles. In recent research, two approaches for understanding differences in the styles defined by Scott and Bruce (1995) have been presented. Dewberry et al. (2013b) proposed a two-component model of decision-making styles. One component captures cognitive preconditions: core processes; (i.e., how information is processed relating to the Rational, Intuitive and Spontaneous styles). The other component captures personality: regulating processes: (i.e., when and if decisions are made relating to the Avoidant and Dependent styles). In sum, the model proposed by Dewberry and colleagues suggests that comprehensive definitions and measures of decision-making styles – such as Scott and Bruce’s (1995) GDMS – include aspects of decision making that are essentially unrelated. That is, whereas styles that reflect core processes are associated with System 1 or System 2 thinking, styles suggested to attend to regulating processes are associated with fear and anxiety.

Delaney et al. (2015) examined whether styles (analyzed at the item level) form distinct clusters (profiles) and, if so, whether these profiles relate to age and gender. They found that the five styles of the GDMS formed three distinct profiles. The first profile, “affective/experiential”, is characterized by reports of making quick and gut-based decisions and a disinclination to seek advice from other people. The second profile, “dependent/interpersonal”, is characterized by an inclination to request decisional advice and support from other people. The third profile, “independent/self-controlled”, is characterized by a preference for independent and reason-based decisions. Delaney et al. also found that older people were more likely than younger people to be in the independent/self-controlled...
profile and less likely than younger people to be in the affective/experiential profile. They observed no relationship between age and the dependent/interpersonal profile. As far as gender differences, they found that women were less likely than men to be in the affective/experiential profile and more likely to be in the dependent/interpersonal profile.

**Are decision-making styles related to social orientation and time-approach?**

The descriptions of decision-making styles, proposed by Dewberry et al. (2013b) and Delaney et al. (2015), are indeed useful in understanding how people make decisions. However, because decisions are often made in continuous, dynamic and complex social settings (e.g., Frith & Singer, 2008; Rilling & Sanfey, 2011), it is also useful to explore how styles relate to individuals’ functioning in everyday life. In line with this, Leykin and DeRubeis (2010), in suggesting that differences in styles can be perceived as adaptive expressions of decision-making deficiencies, recommended that “…the role that individual characteristics play in influencing decision-making styles…” should be investigated (p. 511). Wood and Highhouse (2014) also proposed that research on individual differences in decision-making styles would benefit if more attention were paid to accountability aspects/concerns. In sum, because the literature on how styles relate to individuals’ orientation and functioning in everyday life, including work life, is limited, more research in the area is needed.

Some researchers have reported a relationship between decision-making styles and aspects of social orientation (e.g., Di Fabio & Kenny, 2012; Di Fabio & Palazzeschi, 2009) and aspects of time orientation (Carelli, Wiberg & Wiberg, 2011). Nevertheless, this research have either been selective or not had these relationships as its primary concern. Therefore, a more detailed exploration of these relationships is needed. In addition, researchers have not explored how social orientation and time-approach influence decision-making styles inclusively. Research in these areas could improve the theoretical understanding of decision-making styles (Appelt et al., 2011). Study 3 in this thesis addresses these areas.

**Decision Quality**

It might be expected, given the diversity of decision-making research, that normative standards would have received less attention or at least less estimated importance. But this is not the case. In contrast, normative standards are generally considered essential in decision-making science as a point of reference to account for the quality of decisions (i.e., *normative*
decision analysis) or for the purpose of explaining how decisions are made (i.e., descriptive decision analysis). Hence, normative standards are often equated with good decisions (Baron, 2012).

However, the correctness and relevance, of attending to normative standards when evaluating decision quality have not gone unchallenged. For example, researchers question whether it is appropriate to make quality assessments by normative models and whether the standards these models promote (e.g., internal consistency in decision making) really equate with good decision making. This critique derives from the idea that normative standards tend to be overtly focused on the decision outcome, thereby neglecting the fact that decisions are often associated with uncertainty and that positive outcomes can be given by chance. As a result, researchers propose that evaluations of decision quality are more adequately approached by a focus on the decision process (Frisch & Clemen, 1994). To illustrate, a focus on the decision process attends to how people generate options and how they evaluate possible consequences. Such a focus expands the definitions of utility in terms of convenience (Bettman et al., 1998) and/or in terms of appropriateness (March, 1991).

Some researchers even argue that decision-making science focuses too narrowly on how decisions conform to standards of rationality and neglects how decision making best relates to practical rationality (referred to as substantive rationality by Keys and Schwartz, 2007). In making their argument, Keys and Schwartz suggested that the effects of the psychological processes leading to “irrational” decisions (i.e., heuristics and biases) sometimes influence the experience of the decision. Indeed, it has been reported that experiences or evaluations of biases (e.g. framing effects) are difficult to ignore or correct in hindsight (Frisch, 1993). Thus, changes in the description of choice alternatives should not be ignored if they influence decision-makers’ experiences.

Consequently, Keys and Schwartz (2007) emphasized that subjective consequences should be the standards for evaluating decisions (rather than objective consequences). Moreover, Keys and Schwartz proposed that such evaluations can be assessed by exploring how consequences of decisions are experienced as well as by how decision-processes conform with decision-makers’ life as a whole. Stanovich (2013), who addressed this idea, argued that people violate the axioms of rational choice because of contextual complexity (e.g., shifting information makes adherence to the consistency-requirement difficult), symbolic complexity (e.g., choices
can have different symbolic value or meaning for different decision-makers or in different social settings), and the so called strong evaluator struggle (e.g., in reflecting on a preference/desire, people may choose a higher-level preference).

Schwartz, Ben-Haim and Dacso (2010) proposed that, due to the fundamental uncertainty in which many real-life decisions are made, the best decision strategy does not aim to maximize utility but rather to maximize satisfaction (or, on average, a strategy most likely to be satisficing). The benefit of satisficing compared to maximizing has been observed in different contexts (Jain, Bearden & Filipovic, 2013; Schwartz et al., 2002). It has also been demonstrated that maximizers are generally less happy (less satisfied) with outcomes compared to satisficers because they maximize both positive and negative outcomes (Polman, 2010). Related to this, Sims, Neth, Jacobs and Gray (2013) suggested that melioration (i.e., choosing a local and lesser gain instead of a distant and greater gain) may be an optimal response strategy that maximizes long-term gains in complex and uncertain settings.

The dominant tendency in decision-making science to describe people as intuitive scientists (e.g., strive for causal understanding) or as economists (e.g., determined to maximize utility) has also been questioned. Tetlock (2002) challenged this description with the claim that it would be advantageous and more useful to shift, or complement, the focus by emphasizing the social functions of decisions. The accountability approach to decision making offers this focus, as well as an alternative assessment of decision quality. Although this approach is described in more detail below, here it is sufficient to remark that the accountability approach claims that good decisions are those that can be accounted for. That is, quality is evaluated by the extent that decisions are considered to be reasonably and acceptably justified by oneself and/or by people in the social context (Lerner & Tetlock, 1999; Tetlock, 1985).

More in general, it has been argued that good decision-making processes often leads to good decisions (Keren & Bruine de Bruin, 2003; Yates, Veinott & Patalano, 2003). However, as some researchers have observed (e.g., Frisch & Clemen, 1994), this relationship is not absolute. The basic assumption is also problematic because good decision-making processes may result in poor decisions (and outcomes), and poor decision-making processes may result in good decisions (and outcomes). Furthermore, in order to evaluate the relationship between good decision-making processes and good decisions (outcomes), independent criteria for the latter must be specified.
It is relevant in this discussion to consider how people actually evaluate decision quality. Some research concludes that people often stress the outcomes and consequences of decisions as the best indicator of quality (Yates et al., 2003). Yet other research reports that people also evaluate how these outcomes and consequences are reached (e.g., Ritov & Baron, 1990). This point of view implies that the process, and not the outcome, may best indicate the quality of a decision (Baron, 1994; Frisch & Clemen, 1994). In addition, research reports that people sometimes evaluate (“unnecessarily”) precautious decisions as better than the consequentially right alternative (Dekay, Patiño-Echeverri & Fishbeck, 2009).

In general agreement with Keys and Schwartz (2007) and Schwartz et al. (2010), other researchers propose that the quality of real-life decisions cannot be adequately evaluated without relating these to the decision-maker’s personal goals and standards (Weiss & Weiss, 2012). Commenting on personal goals, Higgins (2000) noted that decisions may sometimes be incorrectly evaluated as unsuccessful (e.g., failed to achieve a positive outcome) because objective evaluations may not consider the decision-maker’s intention (e.g., motivated to avoid a negative outcome). It is also possible that negative decision outcomes should sometimes be evaluated as successful. For instance, in situations where decision-makers only have the possibility to choose between alternatives associated with negative outcomes, a negative outcome should, generally speaking, be evaluated as successful if it minimizes negativity (Parker, Bruine de Bruin & Fischhoff, 2015). In sum, as this brief and selective review illustrates, the issue of decision quality is neither easily settled, nor a topic in consensus.

**Decision quality in everyday life**

The relevance and predictive validity of the DMC to real-life decision outcomes is repeatedly referred to within the research-literature on decision-making competence (see, e.g., Bruine de Bruin, 2012; Campitelli & Gobet, 2010; Carnevale et al., 2011; Del Missier et al., 2012; Fischhoff, 2010; Jacobson et al., 2012; Mäntylä, Still, Gullberg & Del Missier, 2012; Weaver & Stewart, 2012; Weller, Levin, Rose & Bossard, 2012; Weller, Moholy, Bossard & Levin, 2014). The position taken in this thesis is that this claim needs to be more adequately defined.

Bruine de Bruin et al. (2007), in addition to developing the DMC, also developed a self-report measure for real-life decision outcomes which was used in order to validate the DMC: the *Decision Outcome Inventory* (DOI). This self-report measure is intended to identify individual
differences in the success/quality of real-life decision making by terms of having been able to avoid negative outcomes. While other measures of decision-making success used in DMC research are more domain specific (e.g., risk-taking or school performance; Parker & Weller, 2015; Weller et al., 2012), the DOI is the foremost measure on which the reference to DMC’s predictive validity for overall real-life decision-making success is based. Although the validity of the DOI has been investigated in recent research, for example demonstrating that lower DOI-scores (i.e., more negative outcomes) are more common among younger people and among people of lower socio-economic status (Parker et al., 2015) and may be a relevant measure to consider in relation to clinical depression and suicidal ideation (Bruine de Bruin, Dombrovski, Parker & Szanto, 2015), it is still unclear how high or low DOI scores relate to other indicators of real-life decision-making success (e.g., subjective experiences).

The Decision Outcome Inventory

The DOI mostly consists of a collection of item-pairs in which the first question asks whether or not (in the last ten years, cf. Bruine de Bruin et al., 2015) individuals have made decisions that make subsequent negative outcomes possible. For example, gone shopping for food or groceries, followed by, threw out food or groceries you had bought because they went bad: been married followed by been divorced, etc. In total, the DOI consists of 41 decision outcomes with 34 item-pairs (some pairs consist of more than one possible negative outcome) and some single items (i.e., items without a preceding screening questions, such as declared bankruptcy and been diagnosed with Type 2 diabetes) encompassing different domains of real-life decision making. The domains include economy, health, and indicators of risky (or socially deviant) behavior.

The total DOI score is calculated by weighting each report of a negative decision outcome by the proportion of participants reporting to not have experienced this negative outcome (e.g., been divorced), although they had the possibility (e.g., been married). Thus, the total DOI-score is based on the assumption that less frequent negative decision outcomes are more severe than the more frequent ones – in the specific group studied (cf. Parker et al., 2015).

The DOI undoubtedly measures some aspects of real-life decision-making success. However, because people’s real-life decisions are often made in conditions of uncertainty and complexity, the appropriateness of only attending to objective and normative standards could be questioned. For example, it may be argued that some items of the DOI deal with human
experiences out-of-context. To illustrate, if a person has had a credit card and has had more than $5000 in credit card debt (an item pair/negative outcome in the DOI), it is not necessarily implied that the decision to get into this debt should be regarded as a negative outcome. Context matters. For some people, $5000 may or may not be a large amount for a person, or the debt could have been a good decision as it minimized negativity (e.g., an urgent need for a new roof to one’s house) or maximized positivity (e.g., a sudden opportunity for a memorable vacation with loved ones) in other domains of a person’s life.

Moreover, certain items on the DOI could be considered to comprehend outcomes that are to some extent given by chance (e.g., missed a flight, had the key to your home replaced because you lost it, or broken a bone because you fell, slipped or misstepped). Perhaps it is such limitations that have resulted in the limited further use of the DOI in research. This limited use is noteworthy, since an adequate measure for real-life decision-making outcome most probably would have been much used within decision-making research. Nevertheless, except for the research described above, the DOI (in a somewhat amended version) has been used only in research that explores the benefits of critical thinking (Butler, 2012; Butler et al., 2012) or as a measure of competence, not outcomes (Dewberry et al., 2013a).

**Indicators of subjective decision quality in everyday life**

Given the difficulty of measuring decision quality, it may be beneficial to take a multifaceted approach to its analysis. Due to the complexity of the issue, such an approach has been proposed by previous researchers (Yates et al., 2003). Yet other researchers have suggested that, in the context of real-life, approaching and evaluating everyday decision quality is probably most adequately done in terms of accountability (Keren & Bruine de Bruin, 2003). That is, in the social complexity of real-life, being able to make decisions that are supported, approved and positively evaluated by other people, is a useful criterion for evaluating decision quality. Importantly, the accountability approach to decision making does not only assume that decision-makers should be able to justify their decisions to others but also to themselves. Milkman, Chugh and Bazerman (2009) commented on the relevance and importance of decision-makers’ personal satisfaction (i.e., accountability) with their decisions and the reasonable assumption that such evaluations are the same whether they concern one’s own or other people’s decisions.
However, the accountability approach does not provide a specific or direct measure of real-life decision quality. Instead, indicators for such quality must be inferred. The basic assumption of the accountability approach focuses on the social contingency of decision making in terms of the interaction between subjective experiences and social dependencies (i.e., that decision-makers can justify their decisions if held accountable; Tetlock, 1985). Hence, a reasonable approach to measuring decision quality is to examine decision outcomes in variables that are influenced by this interaction. In the next sections such variables are proposed.

**Experiencing minor difficulties in life: “daily hassles”**

Bruine de Bruin et al. (2007) proposed that experiencing everyday difficulties is one possible consequence for people with lower decision-making capabilities. Consequently, measuring to what extent people experience difficulties in various domains (e.g., social, work-related and/or financial difficulties) of their daily lives (Kohn & McDonald, 1992) can be seen to reflect their ability to make effective decisions. For example, the assumption is that being able to perform good and accountable decision-making processes results in fewer questions and/or less criticism from others (i.e., social difficulties), fewer misunderstandings and/or conflicts with supervisors or colleagues (i.e., work difficulties), and fewer problems in personal economy (i.e., financial difficulties).

Although this measure of people’s self-reported everyday difficulties may resemble the design of the DOI, it nevertheless broadens the definition of decision quality because of its emphasis on the successful implementation of everyday decision-making processes. Indeed, the design of the DOI was patterned after life event scales, assessing self-report of life stress in terms of experiences of negative events (Parker et al., 2015). However, and importantly, self-reports of everyday difficulties reflect decision-makers’ subjective experiences and thereby differ from the design of the DOI. The Survey of Recent Life Experiences (Kohn & MacDonald, 1992) measures reports of daily hassles in various domains of life and was used in the present thesis (Study 1) as an indicator of real-life decision-making outcomes.

**Satisfaction with life**

Another measure of real-life decision-making quality is reported satisfaction with life. This offers a potential way to assess how individuals evaluate their general decision-making
success by use of their own subjective criteria. Subjective well-being is based on cognitive assessments in which one’s perceived circumstances are compared to personal and self-imposed standards (Pavot & Diener, 1993). Therefore, reports of subjective well-being capture some fundamental aspects of how decisions conform with personal goals and standards (Higgins, 2000; Keys & Schwartz, 2007; Weiss & Weiss, 2012).

Furthermore, beyond the usefulness of adhering to different validation criteria for decision quality, it is also important to include subjective well-being in order to explore if the motive for developing interventions designed to improve peoples’ decision-making could be even more strengthen by a relationship between decision-making competence and overall satisfaction and quality of life (see, e.g., Bruine de Bruin et al., 2015; Wallin, 2013). In addition, measures of satisfaction with life specifically ask to what extent their life, at the current stage, is to their satisfaction or whether or not they, in hind-sight, would have done things differently (Diener, Emmons, Larsen & Griffin, 1985). Hence, satisfaction with life reflects subjective evaluations that are largely in inverse relation to the subjective evaluations captured by measures of regret that are frequently used to indicate success and/or quality in decision-making research (e.g., Inbar, Botti & Hanko, 2011; Kirkeboen, Vasaasen & Teigen, 2013; Schwartz et al., 2002).

However, because multiple factors influence subjective well-being and because personal standards of success differ from one person to another, one proposal is that satisfaction should be measured globally (Diener et al., 1985). That is, since the domains of these evaluations are not defined in advance but opens for subjective inference, global measures of satisfaction with life respond to personal evaluations of general goal-fulfillment in life, or the with the extent to which people regret past experiences, etc. For example, Hultell and Gustavsson (2008) proposed that age-differences in reports of satisfaction with life might reflect experiences with critical decisions and subjective reflections on their consequences. In this thesis, Study 1 uses the Satisfaction With Life Scale (Diener et al., 1985) that measures subjective well-being and general satisfaction with life as an indicator of real-life decision-making outcomes.

**Stress**

Another way to evaluate decision quality is to attend to measures of perceived stress. As the everyday is filled with both numerous and hard decisions, ability to make good decisions can be expected to decrease and protect against stress. The effects of stress on decision making
have been previously investigated. For example, research shows that people who are more sensitive to stress perform more poorly on decision-making tasks (Baradell & Klein, 1993). However, some researchers have highlighted that stress and decision making are intricately related, as stress influences decision making, and many decisions induce stress (Starcke & Brand, 2012). In brief, perceived stress may be used to indicate real-life decision-making outcome.

Yet there is a scarcity of research that explores the reverse relationship (i.e., how decision-making performance affects stress). Nevertheless, supportive of such a reverse relationship, recent research has reported results suggesting that decision-making ability can be a potential coping-resource against stress (Santos-Ruiz et al., 2012). Furthermore, stress is per definition a response that occurs when environmental demands exceed a person’s regulatory capacity (see, e.g., Koolhaus et al., 2011). As this thesis emphasizes, making (good) decisions is a requirement in daily life, both personally and professionally. Thus, people’s decision-making ability (i.e., competence) may (or perhaps even should) be an important component of their regulatory capacity (see, e.g., Loewenstein, 2001; Weller et al., 2014).

Additionally, stress is not only a fast or immediate response to a specific stressor but can also evolve as a result of complex cognitive evaluations of situations and possible consequences (Ursin & Eriksen, 2010). Consequently, a person’s decision-making competence may influence these evaluations. In sum, individual differences in the ability to handle everyday decision making are likely to contribute to psychological stress. In this thesis, Study 2 uses the Perceived Stress Questionnaire (Levenstein et al., 1993) to measure perceived stress as an indicator of real-life decision-making outcomes.

**Expanding the criteria of everyday decision quality**

Although multiple factors undoubtedly contribute to the variances in the different outcome measures described above, it could still be argued that overall efficient and successful decision-processes provide substantial explanations of these variances. Furthermore, being able to carry out decision processes in accordance with the demands in social settings may increase the chances for (successful) implementation of the decision (Allwood & Hedelin, 2005). Additionally, an advantage of measuring decision quality with the outcome measures described above is that they constitute well-studied constructs. Finally, exploring the predictive validity of decision-making competence with different outcomes measures is
important in order to motivate interventions and recommendations aimed at improving people’s decision-making in both personal and professional settings. Therefore, expansion of the criteria used to evaluate real-life decision-making success to include daily hassles, well-being and stress has clear merits.

**Expanding the concept of decision-making competence**

By investigating the relationship between decision-making competence (i.e., the DMC) and the outcome variables described above, it is possible to further test the external validity of the DMC. Moreover, investigating the relationship between the previous outcome measure (i.e., the DOI) and the outcome variables described above, also offers an opportunity to explore how objective and normative definitions of decision quality relate to subjective experiences (e.g., Keys & Schwartz, 2007).

This thesis assumes that cognitive abilities contribute to, or are necessary for, real-life decision-making success. One example is the ability to attend to and be able to process relevant decision information correctly. These basic cognitive capabilities are measured by the existing definition of decision-making competence (i.e., by the DMC). However, many real-life decisions are made in complex social settings. In these everyday settings, decision-making processes and final decisions often require to be appropriately fitted to the specific context. This implies that basic cognitive capabilities may not suffice. In this thesis it is assumed that, in the everyday and working life, people also require both a broader range of social competence and an appropriate approach to time in order to be competent decision-makers.

Although the DMC, to some extent, aspires to encompass the social aspects of decision making, in particular by the component recognizing social norms, it does not fully deal with the social dimension of real-life decision making. In fact, research has reported that social dimensions of the decision and individuals’ approach to time can affect performance on tasks (i.e., resistance to sunk costs) measured by the DMC (Hafenbrack, Kinias & Barsade, 2013; Strough, Schlosnagle, Karns, Lemaster & Pichayayothin, 2014).

This thesis does not claim there is a social/time dimension to all everyday decisions. Rather, the claim is there is a social/time dimension to most everyday decisions. Hence, the studies reported and discussed in the present thesis are based on the assumption that peoples’ overall decision-making competence and approach to decision making depend on decision-related
aspects of social skills/orientation and time-approach. The measures used in the studies of this thesis were selected because they recognize such differences.

**Decision making and social skills/competence**

Previous research has acknowledged the social nature of real-life decision making (e.g., Sanfey, 2007; Tetlock, 1985, 2002). Research has also observed that everyday decision making sometimes involves a conflict between reason and emotion (Frith & Singer, 2008). This conflict is evident by the fact that many decisions require delay of gratification and/or emotion regulation in order to be successful (Rilling & Sanfey, 2011). In sum, certain aspects of social competence are fundamental if people are to make efficient and successful real-life decisions. Although many aspects of social competence likely contribute to effective everyday decision making, this thesis focus on: self-awareness, social character and emotional intelligence. The next sections explain the reason for selection of these aspects.

**Self-awareness**

One aspect that can be expected to aid decision making in social settings is the ability to recognize social cues and be able to adapt ones’ behavior and self-presentation accordingly. The social psychological phenomenon *self-monitoring* targets these abilities (Gangestad & Snyder, 2000; Lennox & Wolfe, 1984; Snyder, 1974). Numerous studies have demonstrated the general benefits associated with self-monitoring. For example, self-monitoring has been related to individual differences in job performance and promotions (Day, Schleicher, Unckless & Hiller, 2002) and how and if a person can accurately, profitably and strategically recognize and handle social-exchange relations (Flynn, Reagan, Amantullah & Ames, 2006). These reports suggest that the aspects of social orientation comprehended by self-monitoring, help people to perform successful decision-making processes in social settings for example by acknowledging and responding to accountability demands. Therefore, it seems reasonable to include individual differences in self-monitoring when studying what factors contribute to real-life decision-making success.

**Social character**

Another aspect relevant to consider in real-life decision making is social character. For example, the extent to which one trust and is sincere towards others and the extent to which one ruthlessly strives for status and is ready to stray from moral standards in order to achieve
personal benefits Individual differences in these propensities are comprehended by Machiavellian Personality (Christie & Geis, 1970; Dahling, Whitaker & Levy, 2009). Research has demonstrated that the manipulative and amoral tendencies associated with Machiavellianism relate to counterproductive work behavior, poorer task performance and more egoistic decision making. Campbell, Hoffman, Campbell and Marchisio (2011) also demonstrated that the antagonistic behavior captured by Machiavellianism negatively affects the health and well-being of people (colleagues) in their work environments. Additionally, it has been reported that the Machiavellian personality construct is related to such adverse traits of narcissism, and sub-clinical psychopathy – together constituting the so called dark triad of personality (Paulhaus & Williams, 2002).

Given this research, it is reasonable to assume, at least in the long run, that higher degrees of Machiavellianism personality are associated with reduced efficiency and less success in socially complex, everyday decision making. However, it should be noted that other research argues that a certain degree of Machiavellianism can be beneficial (e.g., distrust of others may prevent naïve credulity; Whiten & Byrne, 1997).

Emotional intelligence

As made evident by previous research (Bechara & Damasio, 2005; Slovic et al., 2002), emotions influence decision making. Yet, the role of emotion as beneficial or problematic has been debated (e.g., Peters, Västfjäll, Gärling & Slovic, 2006). Additionally, because emotions (affect) can be defined in terms of state or trait, the measurement of individual differences in emotion-influence on decision making might seem problematic. However, one way to approach this can be by investigating individual differences in emotional intelligence (Petrides & Furnham, 2001).

The research on emotional intelligence [EI] is diverse with numerous measures used to explore individual differences by self-reports (trait-EI) or by maximum-performance (ability-EI). Measures of trait-EI cover the subjective nature of emotions in terms of experiences, dispositions and self-perceptions. By contrast, measures of ability-EI covers knowledge about emotions and is more strongly related to cognitive ability (Perez, Petrides & Furnham, 2005). Evidently, the usefulness of trait-EI and/or ability-EI depends on what component of EI that is of interest. However, it has been noted that self-report measures of trait-EI that combine direct questions (e.g., self-rated emotion-regulation ability) with indirect questions (e.g.,
relationships with others/success in dealing with others) are beneficial and reasonably capture core aspects of EI (Spector & Johnson, 2006). Furthermore, as the benefits of trait-EI for social decision-making seems to be given by enhanced processing of emotional information in System 1 (Telle et al., 2011), trait-EI may relate to emotion regulation in terms of reappraisal (Gross, 2002).

Furthermore, researchers have related trait-EI to peer-rated social competence (Mavroveli, Petrides, Rieffe & Bakker, 2007), coping with stress (Mikolajczak & Luminet, 2008), decision-making styles (Di Fabio & Kenny, 2012), and decision-making success in social contexts (Mikolajczak, Balon, Ruosi & Kotsou, 2012; Telle et al., 2011). It has also been suggested that trait-EI is particularly appropriate for the measurement of general aspects of decision-related emotional disposition and emotion regulation (Sevdalis, Petrides & Harvey, 2007).

**Time and decision making**

Time is an important dimension in the study of people’s decision making (Loewenstein et al., 2003). For example, Wittmann and Paulus (2007) showed that the way in which time is perceived and approached affects how individuals make decisions and evaluate their outcomes.

The impact of time on people’s decisions has often been examined in terms of the delay of gratification (i.e., sacrificing short-term happiness in favor of long-term well-being; Stratham et al., 1994). Explorations and explanations of people’s preference for immediate utility over delayed utility are central in the research on inter-temporal discounting (Frederick, Loewenstein & O’Donoghue, 2002). For obvious reasons, these preferences relate to self-control (Baumeister, Schmeichel & Vohs, 2007; Joireman, Balliet, Sprott, Spangenberg & Schultz, 2008). Individual differences in how time is perceived and approached are, of course, also related to how time is managed. Such differences affect people’s temporal focus (i.e., present, past or future), their prioritizing, structuring and planning (i.e., more or less appropriate and effective), and their experience of time duration (i.e., how much time is dedicated to certain tasks; Claessens et al., 2007).
Time-approach

The research literature has demonstrated that people’s time-approach influences their decision making (Usunier & Valette-Florence, 2007; Zimbardo & Boyd, 1999). Conclusions in this research are that individual differences in time-approach relate to how people approach decisions (Carelli et al., 2011) and affect consumer-decisions (Usunier & Valette-Florence, 2007). Researchers have defined individual differences in time-approach in various ways: a focus on impulsiveness vs. future considerations (Stratham et al., 1994), a somewhat existential perception (Zimbardo & Boyd, 1999), or a more direct and differentiated conception (Usunier & Valette-Florence, 2007). Although some differences in terminology exist between these approaches, it has been proposed that different definitions are largely interchangeable (Drake, Duncan, Sutherland, Abernethy, & Henry, 2008).

Procrastination

As previous research has concluded, time-approach is an important factor in the study of peoples’ real-life decision making. Additionally, a specific aspect of time-approach is the tendency to procrastinate, that is, to postpone the commencement or completion of necessary tasks (Lay, 1986). Procrastination has been explained in numerous ways (Steel, 2007). Although procrastinating behavior is related to short-term benefits, research concludes procrastination leads to lower task-performances and to long-term costs (Tice & Baumeister, 1997). Both time-approach and procrastination are important in personnel selection, as approach to time guides people’s judgments and decisions in both personal and professional settings (Gupta, Hershey & Gaur, 2012). Hence, the three studies reported in this thesis examine this conclusion by investigating the effects of time-approach and procrastination behavior.

In sum, research points to a complex relationship between decision making, aspects of social skills/competence and time-approach. This thesis explores this relationship in two ways. First, it investigates if, and to what extent, the existing concept of decision-making competence would be improved by including aspects of social skills/competence and time-approach. Second, it explores if investigating the relations between individual differences in social skills/orientation and time-approach and decision-making styles can advance the understanding for variations in decision-making styles (Study 3).
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Summary of the Studies

Study 1

Aim. Study 1 included three sub-studies: Study 1.1, Study 1.2, and Study 1.3, targeting different samples; a community population, police investigators and social workers. The first aim was to explore how an objective, normatively defined, measure of real-life decision-making outcome/success relates to other, subjective defined, indicators of real-life decision-making outcome/success. The second aim was to investigate if the predictive power of the DMC would replicate when other criteria (i.e., subjective indicators) are used. The third aim was to explore if, and to what extent, individual differences in social skills/competence and time-approach add to the statistical explanation of real-life decision-outcomes beyond the explanation provided by the more cognitive capabilities that the DMC measures.

Method. In Study 1.1, 175 participants – generally representative of the Swedish community population – completed a web-based questionnaire managed by an on-line survey company. The questionnaire included the following scales: the Decision Outcome Inventory (DOI) that measures individual differences of having been able to avoid negative outcomes associated with real-life decision making in the last ten years; the Satisfaction With Life Scale (SWLS) that measures general satisfaction with and overall goal-fulfillment in life; and the Survey of Recent Life Experiences (SRLE) that assesses the extent of people’s experience with daily hassles in the most recent month.

In Study 1.2, 90 Swedish police investigators (37 % women, mean age = 46 years) completed a questionnaire presented to them in web page format or in paper-and-pen format. These participants were representative of professionals who face complex situations where good decisions are an everyday necessity. The questionnaire included the following scales: the Adult Decision-Making Competence scale (DMC) that measures individual differences in performance on traditional decision-making tasks; the Self-Monitoring Scale (SMS) that includes both individual differences in the ability to tune into the social environment and in the ability to adapt behavior according to changing demands; the Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF) that assesses individual differences in the ability to understand one’s own and others’ emotional reactions as well as aspects of the ability to regulate emotions effectively; the Time-Style Scale (TSS) that assesses individual differences of preference in approach to, or tendencies toward, time; the Procrastination Scale (PS) that
measures individual differences in the tendency to postpone the commencement and completion of tasks. Additionally, as dependent variables (i.e., measures of real-life decision-making outcomes) the questionnaire also included the following measures: the Satisfaction With Life Scale (SWLS) that measures subjective evaluations of general goal-fulfillment in, and satisfaction with, life (at the current stage); and the Survey of Recent Life Experience (SRLE) that measures individual differences in experiences of minor difficulties and hassles in everyday contexts (in the most recent three months).

In Study 1.3, 118 social workers (85% women, mean age = 43 years) completed a web questionnaire. Study 1.3 used the same material as Study 1.2 but also included the Decision Outcome Inventory (DOI). However, to be suitable for the professional sample, some amendments to the DOI were necessary. Hence, six items/outcomes in the DOI about infidelity, diagnosis of sexually transmitted diseases, unplanned pregnancy, condom use, drunk driving and overnight jail incarceration (for any reason) were excluded.

Results. Study 1.1 showed that scores on the objective measure of real-life decision-making success (i.e., the DOI) were negatively related to the subjective indicator of real-life decision-making outcomes as measured by reports of daily hassles (i.e., the SRLE). However, no significant relationship was observed between the DOI and reports of general goal-fulfillment in, and satisfaction with, life (i.e., SWLS). Furthermore, reports of daily hassles (SRLE) were related to reports of satisfaction with life (SWLS).

Study 1.2 showed that the skills/competence measured by the DMC did not significantly explain the variances in subjective real-life decision-making outcomes (i.e., experiences of daily hassles and satisfaction with life). However, Study 1.2 provided evidence that decision-related aspects of social skills/competence and time-approach have predictive validity for the targeted criterion variables in addition to the (non-significant) explanation by the DMC. Individual differences in social skills/competence explained 32% of the variance for satisfaction with life, and 19% of the variance for daily hassles. Furthermore, Study 1.2 showed that measures of time-approach explained 38% of the variance in satisfaction with life and 16% of the variance in the experiences of daily hassles.

Study 1.3 replicated the main results from Study 1.2 and expanded the insights of Study 1.1. In Study 1.3 a significant positive relation was observed between general goal-fulfillment in, and satisfaction with, life (i.e., the SWLS) and reports of being able to avoid negative
outcomes associated with real-life decision making (i.e., the DOI). Furthermore, the skills measured by the DMC did not significant explain the variance in subjective or objective real-life decision-making outcomes. However, Study 1.3 replicated Study 1.2’s predictive validation of decision-making competencies in terms of social skills/competence and time-approach to both subjective and objective real-life decision outcomes. In Study 1.3, social skills/competence explained 27% of the variance in satisfaction with life, 30% of the variance in experiencing daily hassles, and 17% of the variance in reports of being able to avoid negative outcomes associated with real-life decision making (i.e., the DOI). Moreover, measures of time-approach explained 28% of the variance in satisfaction with life, 40% of the variance in experiencing daily hassles, and 24% of the variance in reports of being able to avoid negative outcomes associated with real-life decision making.

**Discussion.** The results from the three sub-studies in Study 1 show that an objective, normatively defined, indicator of real-life decision-making success (i.e., the DOI) relates to subjective, experience-based definitions (i.e., as measured by the SRLE and the SWLS). However, more specifically, experiencing daily hassles (SRLE) and reports of being able to avoid negative outcomes associated with real-life decision making (DOI) showed to be (negatively) related in both the community population sample (Study 1.1) and the professional sample (Study 1.3). In contrast, a (positive) relationship between general goal-fulfillment in, and satisfaction with life (SWLS) and reports of being able to avoid negative decision-making outcomes (DOI) was only observed in the sample of professionals (Study 1.3), not in the community population sample (Study 1.1). One possible explanation for this difference in observed relationship is that the scores for reports of being able to avoid negative outcomes associated with real-life decision making (DOI) are sample-specific. That is, the DOI scores are calculated by weighting reports of having experienced negative outcomes by the proportion of participants - in the studied sample - who report not having experienced this negative outcome (e.g., been divorced), although having had the possibility (e.g., been married).

Furthermore, the results of Study 1.2 and Study 1.3 show that the skills measured by the DMC did not have predictive validity for subjective indicators of real-life decision-making success/outcomes (i.e., SRLE and SWLS). Considering the observed relationships between the different outcome measures in Study 1.1, these results are somewhat surprising. In
addition, the finding that the predictive validity of the DMC was not replicated in relation to the criterion variable used in previous research (i.e., the DOI) is especially noteworthy.

In general, the results of Study 1.2 and Study 1.3 clearly support the idea that individual differences in decision-making competence would benefit by including aspects of social skills/competence and time-approach. Considering social skills/competence, trait-EI was identified as the predictor that explained most of the variance in all outcomes measures used in Study 1.2 and Study 1.3. The skills/competence measured by trait-EI contributed to positive outcomes consistently. The results are a bit more complex for the measure of self-awareness (i.e., the self-monitoring scale). Higher degrees of self-monitoring in terms of ability to modify one’s behavior to shifting demands contributed significantly to the explanation of experiencing daily hassles and reports of having been able to avoid negative outcomes associated with decision making (Study 1.3.). However, the contribution of this ability was negative, that is, related to more/higher reports of daily hassles and to a lower ability to avoid negative decision-making outcomes. Moreover, the other aspect of self-monitoring (i.e., being sensitive to the expressive behavior of others) provided a nearly significant explanation (positive direction, that is, with fewer/ lower reports) of experiences of daily hassles (Study 1.2).

Furthermore, the results of Study 1 show that individual differences in time-approach are important for understanding the variance in real-life decision-making success. Overall, the results indicate that it is more important not to have an explicitly negative approach to time (e.g., anxious time-style) than it is favorable to have a positive approach to time (e.g., economic and/or submissive time-style).

Some differences were observed between the samples with regard to the contribution provided by social skills/competence and time-approach. Comparing the professional samples in Study 1.2 and Study 1.3, social skills/competence contributed considerably more to explaining the experience of daily hassles among social workers (Study 1.3.) than among police investigators (Study 1.2.). At the same time, time-approach contributed more to explaining the experience of daily hassles among police investigators than among social workers. These results are reasonable as the social dimension of social workers’ decision making may be more pronounced compared to that of police investigators. Also, aspects of time may be more crucial in crime investigations than in social service cases. In sum, the
results of Study 1.2 and Study 1.3 illustrate that individual differences in social
skills/competence and time-approach are important aspects of a broader definition of
everyday decision-making competence, although this importance can differ depending on the
specific sample and decision context targeted.

**Study 2**

**Aim.** Study 2 investigated the predictive power of DMC, social skills/competence and time-
approach for the outcome measure of *perceived stress*. More specifically, in addition to
exploring the contribution of DMC, Study 2 investigated if supplementary aspects of
competence in terms of; *social skills/competence* and *time-approach* add to the statistical
explanation of experienced levels of *perceived stress*. Study 2 also investigated whether the
benefits associated with decision-making competence (i.e., measured by the DMC), as
reported in previous research, could transfer to the stress-domain. This investigation of
relation was based on recognizing the fact that explorations of how decision-making ability
affect levels of stress are largely absent within the decision-making literature (Starcke &
Brand, 2012) yet is reasonable and has been suggested (Santos-Ruiz et al., 2012).
Specifically, stress is defined as a reaction that occurs when perceived demands exceed the
perceived regulating resources (Koolhaus, 2011), and this reaction can be activated by
cognitive evaluations of situations and possible consequences (Ursin & Eriksen, 2010).
Therefore, decision-making competence could (or even should) be expected to have a stress-
preventive/coping function. Additionally, experienced levels of stress reflect one (subjective)
aspect of real-life decision-making outcome.

**Method.** Study 2 included two sub-studies: the sample in study Study 2.1 consisted of
university students (N=118), and the sample in Study 2.2 consisted of police investigators
(N=90). The professional sample of police investigators was the same as in Study 1.2. Data
for Study 2.1 and Study 2.2 were collected using web-based questionnaires (Study 2.1 and
Study 2.2); data for Study 2.2 were also collected using a paper-and-pen questionnaire. The
questionnaire consisted of scales and self-reports that measures: *cognitively oriented decision-
making skills* (i.e., the Adult Decision-Making Competence scale: DMC), *social
skills/competence* (Self-Monitoring Scale: SMS – Study 2.1 and Study 2.2; Machiavellian
Personality Scale: MPS – Study 2.1; Trait Emotional-Intelligence Questionnaire – Short
Form: TEIQue-SF – Study 2.2), and *time-approach* (the Time-Style Scale: TSS, and the
Procrastination Scale: PS). Participants also completed a self-report measure of perceived stress: the Perceived Stress Questionnaire (PSQ) that measures subjective levels of experienced stress in life (in the last month).

**Results.** Study 2.1 did not support the hypothesized beneficial contribution of DMC performance to the stress-domain. That is, performance on the skills measured by traditional, mostly cognitively oriented, decision-making tasks was not significantly related to reported levels of stress in the student sample. The results, however, demonstrated that individual differences in *social skills/competence* explained 13% of the variance in perceived stress. Specifically, the results demonstrated that distrustful social character tendencies relate to more stress, whereas tendencies of an amoral social character relate to less stress. Finally, individual differences in *time-approach* explained 32% of the variance in perceived stress. Specifically, the past-oriented and the anxious time-styles related to more stress.

Study 2.2 largely confirmed the results in Study 2.1. The DMC was not significantly related to reported levels of perceived stress. However, the measure of social skills/competence explained 22% of the variance in perceived stress. Trait emotional-intelligence was the significant predictor, with higher reports of this skill/disposition related to less stress. Moreover, Study 2.2 demonstrated that time-approach explained 31% of the variance in perceived stress. The anxious and the future-oriented time-styles were significantly predictive and related to higher stress levels.

**Discussion.** Study 2 both rejected and confirmed the hypothesis. In both the student sample and the police investigator sample, the skills measured by the DMC had no predictive validity for levels of perceived stress. However, the results illuminate the social nature of everyday (including the working life) decision making. For example, Study 2.1 demonstrated that individuals who have a distrustful attitude toward others are more likely to experience stress. Distrust of others can make decision-makers to miss opportunities for collaboration (at least in the long run). In Study 2.2, trait emotional-intelligence substantially contributed to the explanation of variance in perceived stress. This result illustrates that the ability to correctly acknowledge emotional reactions in oneself and in other people, as well as recognize that one can regulate and control these reactions, are relevant for understanding the decision making and stress relationship.
Furthermore, considering individual differences in time-approach, reports of a past-oriented and/or anxious approach to time corresponded to higher levels of stress. In contrast, procrastination was not related to perceived levels of stress in Study 2.1 or in Study 2.2. However, this result is consistent with reports in previous research that, in terms of stress, procrastinators may experience short-term benefits (Tice & Baumeister, 1997). Moreover, in the police investigator sample of Study 2.2, a future-orientated time style related to higher reports of stress. This result can be related to recent research on how variances in time-horizons (e.g., by age) can influence decision making (Bruine de Bruin et al., 2014; Strough et al., 2014).

In sum, Study 2 showed that cognitive decision-making competence (i.e., the DMC) may not target the abilities needed to make decisions that help people decrease and cope with perceived stress. However, when the definition of decision-making competence is broadened to include social skills/competence and time-approach, high associations between the predictor variables and perceived stress were observed. These results were apparent both in the student sample (Study 2.1) and in the police investigators (Study 2.2).

The fact that the skills measured by the DMC did not predict stress may be explained by the nature of the two samples. Both samples were fairly homogenous. If the relation between DMC performance and stress was to be explored in a more heterogeneous samples (e.g., a large community sample) a significant relation might be observed. This is an issue for future research.

Yet the results from Study 2 indicate that when a definition of decision-making competence mainly targets cognitively oriented abilities needed for good decisions, the definition may not apply to everyday/working life decision-making outcomes in terms of stress. However, when the definition of competence is expanded to include decision-making abilities in terms of social skills/competence and time-approach, predictive validity is demonstrated. As stress is important for individuals’ health and quality of life as well as for the effectiveness and stability in organizations, Study 2 underlines the need to explore the consequences of a broadened concept of decision-making competence in everyday life.
Study 3

**Aim.** Responding to the call for a better understanding of individual differences in decision making (Appelt et al., 2011), Study 3 explored the relationship between decision-making styles and social skills/competence and time-approach. As decision-making styles refer to the way people usually and preferably respond to, approach, and manage decision making, it could be assumed that stylistic differences relate to an individual’s social skills/competence and time-approach.

Some researchers have studied the relationship between decision-making styles and social skills (e.g., Di Fabio & Kenny, 2012) and time-approach (Carelli et al., 2011). Nevertheless, this research is selective or has not focused on these relationships. Consequently, the nature of such relationships is still unclear and merits further research. Therefore, Study 3 investigated how decision-making styles relate to individual differences in *social orientation* (i.e., social skills/competence) and *time-approach* (i.e., time-styles and procrastination behavior). Study 3 investigated these relationships in two sub-studies: Study 3.1 and Study 3.2.

Additionally, as the definition of decision-making styles suggests that styles to some extent are context-dependent (Scott & Bruce, 1995), Study 3.2 explored if, and how, reports of styles relate to perceived *decision-making demands*. To explore this, participants in Study 3.2 were asked to rate (10 items specifically developed for this investigation, and 2 items for each “stylistic demand”) the decision-making demands they perceive in their working-life.

**Method.** Study 3.1 consisted of 118 university students who completed a web-based questionnaire. Study 3.2 consisted of 90 police investigators (the same sample as in Study 2.2) who used either a web or a paper-and-pen questionnaire. The questionnaires included the following scales: the General Decision-Making Style inventory (GDMS); the Machiavellian Personality Scale (MPS – only used in Study 3.1); the Self-Monitoring Scale (SMS); the Trait Emotional- Intelligence Questionnaire – Short Form (TEIQUE-SF – only used in Study 3.2); the Time Style Scale (TSS); the Procrastination Scale (PS); and questions about perceived decision-making demands (only used in Study 3.2).

**Results.** Study 3.1 showed that decision-making styles related to personal characteristics in social orientation and time-approach. However, the Intuitive style was not as clearly related to these characteristics as the other four styles were. The Rational style was related to reports of a desire for status (sub-scale on the MPS), and the time-styles preference for economic time,
tenacity and future-oriented. In contrast, the Intuitive style related only to social orientation in terms of the SMS sub-scale sensitivity to the expressive behavior of others. The Spontaneous style related to amorally manipulative tendencies (sub-scale on the MPS), sensitivity for expressive behavior of others and ability to modify self-presentation (SMS), as well as to the time-styles preference for quick return and (negative relation) preference for economic time. Moreover, the Avoidant style was strongly related to procrastination behavior and also related to the anxious, non-organized, past-oriented time-styles as well as negatively related to the submissive and the tenacious time-styles. The Avoidant style was also related to distrust of others (sub-scale on the MPS). The Dependent style related to the preference for economic time and past-oriented time-styles, reports of procrastination behavior and (negative relation) sensitivity to the expressive behavior of others (SMS).

Study 3.2 provided additional support for the results of Study 3.1. Yet, in this professional sample, the Intuitive and the Spontaneous styles were not found to be related to variation in social orientation or time-approach. However, the Rational style was found to be related to the preference for economic, tenacious, and (negative relation) the non-organized time-styles. In contrast, both the Avoidant and the Dependent style were again found to be strongly related to the social and time-approach characteristics. Specifically, the relations for the Avoidant style found in Study 3.1 were replicated especially demonstrating a strong relation to procrastination behavior. Related to the observed relation between the Avoidant style and distrust of others observed in Study 3.1, the Avoidant style was (negatively) related to trait-EI (i.e., TEIQue-SF). Furthermore, the relationship between the Dependent style and the social and time-approach characteristics were mostly replicated. However, the Dependent style was found to be related to the future-oriented time-style, not the past-oriented (as in Study 3.1). Moreover, the Dependent style was negatively related to trait-EI.

**Discussion.** The results of the two sub-studies in Study 3 show that decision-making styles are related to people’s social-orientation and approach to time. These results suggest that the understanding of people’s approach to decision making would benefit by more attention on these characteristics. In both Study 3.1 and Study 3.2, the Rational style was related to the preference for economic time and tenacious time-styles. This suggest that people who prefer to take a deliberate and structured approach in their decision making also has this approach in their overall use of time. In the student sample of Study 3.1, self-monitoring was positively related to the Intuitive style and specifically to the Spontaneous style. However, a negative
relationship was found between self-monitoring and the Dependent style. In the police investigator sample of Study 3.2, self-monitoring was not significantly related to the decision-making styles. These differences in results may be explained by an inclination among younger people (i.e., the university students of Study 3.1) to be more sensitive to the reactions and expressions of other people and to be more motivated to “put up a front” of being in control (i.e., modify self-presentation and behave amoral). In contrast, older people prefer to make decisions independently (Delaney et al., 2015).

Both the Avoidant style and the Dependent style have been related to (decision) anxiety (Dewberry et al., 2013b). Our results support this suggestion but indicate that different kinds of anxiety could explain why people tend to use the Avoidant style or the Dependent style. The participants who used the Dependent style had more internally-oriented worries and anxieties (i.e., lower reports of emotion regulation – i.e., a negative relationship to trait-EI scores) and to be less sensitivity for other peoples’ signals and expressive behaviors (i.e., a negative relationship to the SMS sub-dimension of sensitivity to expressive behavior of others). In contrast, people who use the Avoidant style were more characterized by social-oriented anxiety in terms of a fear of failure and being negatively evaluated by others, as well as not being able to understand other people’s emotions or intentions. This interpretation is based on the positive relationship between the Avoidant style and procrastination (Study 3.1 and Study 3.2), the anxious time style (Study 3.1 and Study 3.2), the association with distrust of others (Study 3.1) as well as the negative relation with trait-EI (Study 3.2).

A further contribution of Study 3.2 is the exploration of the relationship between decision-making styles and perceived contextual decision-making demands. Overall, the observed correlations between decision-making styles and decision-making demands illustrate that all styles were positively related to demands for the same style. However, the results also show that perceived demands not necessarily make people approach decision making accordingly; perceived demands may instead make people avoid approaching decisions in ways that stand in clear contrast with these perceived demands.
General Discussion

This thesis explored what skills and features that characterize a competent decision maker, and how successful real-life decision making can be defined, in people’s everyday life and work. Specifically, the studies reported in the thesis addressed the following three questions. First, is it possible to strengthen the predictive power of an existing, mostly cognitively-oriented, definition of individual differences in decision-making competence (i.e., the Decision-Making Competence scale: DMC; Bruine de Bruin et al., 2007) by widening the definition of competence to incorporate decision-related aspects of social skills/competence and time-approach? Second, how is an objective, normatively-defined, indicator of individual differences in real-life decision-making outcomes related to other, subjectively-defined indicators? Third, are individual differences in decision-making styles related to social- and time-oriented characteristics and to how decision-making demands are perceived?

The main results from the three studies reported in the present thesis are discussed below. The discussion begins with a widened definition of individual differences in decision-making competence. The discussion then turns to the relationship between, and the usefulness of, different indicators of real-life decision-making outcomes. Here the focus is on the issue of attending to adequate criteria of decision quality. Thereafter the results of the examination of decision-making styles relationships to individual differences in social orientation and time-approach are discussed. Then the overall results reported in the thesis are integrated and discussed. This discussion focuses on the importance, and the difficulties, of trying to map the factors that contribute to successful decision making in the complex web of everyday life. The discussion concludes with comments on the limitations of the thesis and offers suggestions for future research.

The ability to make good decisions

Study 1 (consisting of Study 1.1, Study 1.2 and Study 1.3) explored the predictive power of three factors of decision-making competence were explored for subjective (the experience of daily hassles; i.e., the SRLE, and satisfaction with life; i.e., the SWLS) and objective (reports of being able to avoid negative consequences of decision making; i.e., the DOI) indicators of real-life decision-making outcomes. The three factors of competence included measures of skills/competence that were a) cognitively-oriented, b) socially-oriented and c) time-oriented. The assumption behind the choice of these competence factors is that all
three capture individual differences in the skills/competence needed to perform good
decision-making processes in real-life.

Contrary to our expectations, the results of Study 1 showed that the cognitively-
oriented competence factor did not significantly explain the variance in decision-making
outcomes. This lack of significant explanation was found in both samples studied. Moreover,
and surprisingly, the insignificance of the cognitively-oriented competence factors was
observed for both the subjective and the objective indicators of real-life decision-making
outcomes.

However, as expected, individual differences in the socially-oriented competence
factor significantly explained the variance in the decision-making outcomes measured. In both
Study 1.2 and Study 1.3, the socially-oriented decision-making skills/competence
significantly explained both the subjective and the objective indicators of real-life decision-
making outcomes. The result of Study 1.3 showed that reported trait-emotional intelligence
was the only single significant predictor for the objective indicator.

The results also supported the assumption that the time-oriented factor of decision-
making competence significantly explains variance in real-life decision-making outcomes. In both
Study 1.1 and Study 1.2 the explanation provided by individual differences in
perceptions of, and general approach to, time was significant and substantial. For the
subjective indicators of decision-making outcomes, the explanation provided by the time-
oriented competence factor was somewhat more sample-specific compared to the socially-
oriented competence factor. Looking at the objective indicator of real-life decision-making
outcomes (i.e., the DOI), the results demonstrated that the time-oriented competence factor
contributed to the overall explanation of the variance even though the contribution of the
single aspects of time-approach was insignificant.

In sum, the results in Study 1.1 and Study 1.2 did not support the hypothesis that
skills/competence measured by traditional decision-making tasks (i.e., the cognitively-
oriented competence factor) hold predictive validity for the explanation of real-life decision-
making success. However, the results supported the idea that the ability to correctly respond
to and adapt one’s decision making in accordance with the demands of the social setting is
related to more positive decision-making outcomes. Furthermore, Study 1.1 and Study 1.2
support the hypothesis that it is important to pay attention to individual differences in time-approach in order to explain decision-making success in real-life.

Study 2 (consisting of Studies 2.1 and 2.2) expanded the exploration of the three competence factors by investigating their predictive validity of the subjective indicator of everyday decision-making outcome in terms of perceived stress. As in Study 1, the three decision-making competence factors (i.e., cognitively-oriented, socially-oriented, and time-oriented) were presumed to target skills/competencies that (on average) contribute to effective decision-making processes. As such processes generally are expected to produce more positive decision-making outcomes, these skills/competencies presumably comprehend essential coping resources for preventing and dealing with perceived stress.

The relationships between the three competence factors and perceived stress were explored in two studies. The results of Study 2 largely confirmed the results of Study 1. Contrary to our expectation, the predictive validity of the decision-making skills/competence measured by the DMC (i.e., the cognitively-oriented competence factor) did not significantly explain stress. Yet the skill/competence measured by the DMC component consistency in risk perception was a significant predictor of perceived stress in Study 2.2.

Furthermore, the results of Study 2 demonstrated that the measures of socially-oriented decision-making skills/competence had predictive ability for reported levels of perceived stress. In sum, these results reveal that differences in how people approach others, how they recognize and respond to social cues, and how they effectively understand and regulate emotional reactions in themselves and in others are important skills/competence that helps to explain variations in real-life decision-making outcomes.

The results of Study 2.1 and Study 2.2 also provide additional support for the importance of including individual differences in time-approach in a wider definition of decision-making competence. In sum, the results suggest it is more important to not have a negative approach to time (i.e., to have an improper temporal focus and/or experience anxiety in time-related activities) than it is beneficial to have a positive approach (e.g., to structure time and be tenacious). The results also suggest that procrastinators may not experience stress at least not in an early stage, and therefore do not “mend their ways” (Tice & Baumeister, 1997).
Study 3 (consisting of Study 3.1 and Study 3.2) examined further the effects and importance of attending to social and time-related characteristics in order to understand individual differences in decision making. Specifically, the results of Study 3 shows that differences in how people usually respond to, and preferably approach, decision making relate to their general social orientation and time-approach. However, social orientation and time-approach features were only observed to be sporadically or non-significantly related to the decision-making styles proposed by Dewberry et al., (2013b) to reflect how people make decisions (i.e., the core-processes targeted by the Rational, the Intuitive and the Spontaneous style).

The result of Study 3.2 further suggests that decision-making styles reflect not only how individuals usually and preferably approach decision making but also how they perceive or disregard decision-making demands (as well as which decision-making demands they take into consideration). These results confirm that styles to some extent are context dependent, but also that styles reflect how people perceive contextual demands. While intriguing, these results of Study 3.2’s should be examined further and replicated. Such research would help us better understand decision-making styles in general. In short, personal characteristics in terms of social orientation and time-approach can increase our understanding of when and if people make decisions.

Measuring decision-making competence – in everyday life

In the integration of the results from Study 1 and Study 2, the complexity of real-life decision making is made evident. Individual differences in the socially-oriented and the time-oriented factors of decision-making competence demonstrated predictive validity in the eight statistical tests of significance, for five indicators of real-life decision-making outcomes, and in the three different samples. In contrast, the overall benefits associated with the cognitively-oriented competence factor were not supported.

What conclusions and suggestions can be drawn from these results? To begin, the results of this thesis contribute to wider and more detailed picture of individual differences in decision-making competence. Specifically, this thesis contributes by demonstrating the importance of attending to social skills/competence and time-approach in a wider definition of decision-making competence that is related to subjective indicators of decision-making outcome.
The results of the studies reported in this thesis expand previous reports that social aspects and approach to time influence peoples’ decision making (see, e.g., Hafenbrack et al., 2013; Strough et al., 2014). Furthermore, the basic assumptions of, and results reported in, this thesis are related and largely consistent with the recently suggested direction in DMC research, emphasizing the importance of considering peoples’ motivation (Strough et al., 2015) and self-control (Weller et al., 2014).

To some extent, the results also show that a definition of decision-making competence is contingent on the criteria used to evaluate decision quality. The contingent relevance is that the results do not show that competence, defined in terms of cognitive ability to adhere to normative standards of rationality, was more important for the objective decision quality criteria than for subjective decision quality criteria. While other researchers have reported a relationship between the cognitively-oriented definition of competence and normative and objective decision quality criteria (e.g., Bruine de Bruin et al., 2007; Parker et al., 2015), this result was not replicated in this thesis. Moreover, it is important to note that other researchers have reported predictive validity for the cognitively-oriented definition of competence to other outcomes than the DOI (e.g., Parker & Weller, 2015; Weller et al., 2012; Weller et al., 2014).

How can these differences in support for the importance or relevance of the DMC be explained? It is possible that the differences in the samples studied and/or the outcomes measured to some extent may account for the different results. The smaller and rather homogenous samples of this thesis may have restricted the power of the DMC evidenced in the results. Furthermore, the subjective outcome measures used in this thesis may not be indicators of decision-making outcomes that a cognitively-oriented definition of decision-making competence (i.e., the DMC) can (or even aspires to) have predictive validity of. However, if our results replicate, is worth noting that if the DMC cannot measure competence in specific samples of fairly ordinary proportion and is not related to decision outcomes relevant for peoples’ everyday decision making, this is a limitation and constraint on its usefulness.

In addition, considering that the different measures and indicators of outcome used in previous DMC research mainly has taken an objective approach (e.g. Parker & Weller, 2015; Weller et al., 2012; Weller et al., 2014), one may ask the following: Can recommendations
and interventions be designed that improve people’s decision making be motivated on the basis of a definition of competence that specifically (i.e., restrictively) relates to objective assessments of decision outcomes? That is, if this definition of competence has no positive effect on decision makers’ experiences (e.g., fewer everyday problems, more satisfaction, and less stress), then the appeal of such recommendations and interventions would seem to come seriously into question.

When the definition of decision-making competence was widened to include essential aspects of decision-related social skills/competence, a significant explanation of both objective and subjective real-life decision-making outcome indicators was observed. Overall, this result supports the suggestion that decision-making science should acknowledge the social nature and function of decisions (e.g., Sanfey, 2007; Tetlock, 1985). In the complexity of everyday life, being able to adhere, adapt, and respond to (shifting) demands in social settings (where most everyday decision making occurs) may sometimes be more important than being able to resist cognitive heuristics and biases. Putting peoples’ everyday decision making competence in a larger perspective, this conclusion relates to the fundamental human motivation to be accepted and included in social and interpersonal relationships (Baumeister & Leary, 1995).

Decision making is omnipresent. The results in this thesis clearly demonstrate that individual differences in how people perceive time, in the feelings that time-oriented activities evoke, and in how people structure or manage time are essential aspects of the general ability to make good decisions. This result is in line with the specific reports (e.g., Frederick et al., 2002; Stratham et al., 1994) and more general reports (e.g., Gupta et al., 2012; Usunier & Valette-Florence, 2007; Wittman & Paulus, 2007; Zimbardo & Boyd, 1999) of the importance to attend to differences in time-approach when trying to understand decision making. Based on the results reported in this thesis, a wider definition of decision-making competence would recognize such differences.

Measuring decision quality – in everyday life

Besides the contribution to a wider understanding of individual differences in decision-making competence, the results of this thesis also shed some light on the issue of decision quality in real-life settings. As noted in the Introduction, the recurring reference to the predictive validity of the DMC for real-life decision-making outcomes (see, e.g., Bruine de
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The results of this thesis show that the objectively and normatively-defined real-life decision-making outcome(s) measured by the DOI are related to some subjective indicators of real-life decision-making outcome(s). Hence, the capability of avoiding negative outcomes in real-life decision making was related to fewer reports of daily hassles and to lower levels of perceived stress. These results can be interpreted in two ways. The results may be considered to provide additional support for the validity of the DOI and also to support the idea that it is useful to attend to different measures when assessing decision quality in everyday life (Yates et al., 2003). The usefulness of a multifaceted approach is also supported by the fact that the different outcomes measures were significantly related, but that the observed correlations were rather small. Furthermore, although the DOI undoubtedly captures some aspect of decision-making success, it is still a measure that requires more validation and development (for a discussion, see Parker et al., 2015).

Furthermore, another important aspect of a multi-faceted approach to the assessment of decision quality is demonstrated by the inconsistent result for the relationship between the DOI and reports of satisfaction with life. The results in this thesis indicate that experiences of negative decision-making outcomes have different effects on people’s general satisfaction with life, depending on the context. To illustrate, it may be that life satisfaction standards in homogenous samples are more similar than they are in heterogeneous samples. As a consequence, the relation between experiences of negative outcomes (e.g., large debts, not being able to secure a loan, etc.) and satisfaction could be more difficult to identify in homogenous samples.
This interpretation is related to the recent report that negative decision-making outcomes are more common among younger people and among people with lower socio-economic status (Parker et al., 2015). That is, the inconsistent relationship between the DOI and life satisfaction (including general goal-fulfillment) observed in Study 1 may depend on sample differences. For example, although personal goals and standards differ, it is reasonable that such differences vary more in the community (i.e., the community sample in Study 1.1) and may vary less in a more homogenous sample (i.e., the social workers in Study 1.3). Hence, the observed relationship between reports of the ability to avoid negative decision-making outcomes and life satisfaction (Study 1.3) may be explained by the combination of more consistent (personal) standards in the sample and the lower frequency of negative decision-making outcomes among older people with higher socio-economic status (Parker et al., 2015).

Furthermore, a possible confounding factor for this observed relation may be given by the fact that social workers face negative decision-outcomes on a daily basis. This fact, in turn, may incline social workers to be more aware of and more satisfied to having been able to avoid such outcomes themselves. However, these are only speculative interpretations of the inconsistent results and future research should explore this issue further.

Understanding individual differences in decision-making styles

Why do people approach decision making differently? In other words, how are individual differences in decision-making styles explained? This thesis explored the assumption that stylistic differences relate to variations in people’s overall social orientation and approach to time. The results (Study 3) provide some support for, and further insights to, this assumption. Both social and time characteristics were clearly related to the Avoidant and the Dependent styles. These results are in line with the two-factor model by Dewberry et al. (2013b), proposing that the Avoidant and the Dependent styles reflect regulating processes (i.e., if and when decisions are made). However, yet in line with the two-component model, only sporadic or non-significant relations were observed between social and time characteristics and the Rational, Intuitive and Spontaneous styles proposed to reflect core processes (i.e., how decisions are made).

Relating these results to Dewberry et al.’s two-factor model and to the theoretical understanding and definition of decision-making styles, the following suggestions can be
made. For example, because people use a combination of styles in their approach and management of decision making (Scott & Bruce, 1995), two analyses should be made of reports on decision-making styles. That is, one analysis attends to the reports of how decisions preferably and usually are made (i.e., core processes as reflected by the Rational, the Intuitive and the Spontaneous style). A second analysis would address the variation of inclinations for if and when decisions are made. Then, the relation between individuals’ reports of these two aspects in peoples approach to their decision making should be analyzed. This differentiation could lead to a more comprehensive and theoretically sound understanding of individual differences in decision-making styles (Appelt et al., 2011). As a specific example, two separate analyses could improve the description and understanding of results such as the positive correlations between the Rational style and the Dependent style (e.g., Study 3.2) that also have been reported (but not explained) in previous research (Bavol’ar & Orosova, 2014; Loo, 2000). Hence, from such a differentiated perspective, a positive relation between the Rational style and the Dependent style can support that it is sometimes rational to consult (the opinion of) other people or let others decide (e.g., due to organizational regulations or requirements).

Additionally, the understanding of decision-making styles would benefit by further attention to the demands and requirements people perceive. In particular, this research would be helpful when stylistic differences are explored in specific samples and contexts such as different work-life settings. Ultimately, such explorations would add a dimension to the interpretations of which styles are more prevalent and related to specific outcomes in some professions but not in others (e.g., Allwood & Salo, 2011). In Study 3, in which this issue was explored, the results revealed a complex relationship between perceived demands and reports of styles. Study 3.2 showed that perceptions of demands are related to decision-making styles. The results did also show that perceived demands sometimes seem to make people try to avoid approaching decision making in ways that contrasts with, rather than corresponds to perceived demands. However, this research area is new. Future research needs to explore, further develop and validate the questions posed in Study 3.2 to measure perceived demands.

**Pro-social skills/competence and “dark intelligence”**

A basic assumption in this thesis is that social skills/competence can contribute to good decision-making processes, ultimately leading to decisions that are accepted and
approved by others and have more subjectively positive consequences. Moreover, social skills/competence may improve the chance for (successful) decision implementation. Nevertheless, a topic not discussed in this thesis is that the nature of and motives behind social skills/competence are not always pro-social. Egoistic or anti-social motives may drive these social orientations. For example, paying attention to the emotions and reactions of other people, as well as monitoring one’s self-presentation, can have a manipulative motivation.

Consistent with this idea, researchers have reported that self-monitoring, emotional intelligence, and Machiavellianism can have a complex relationship (Grieve, 2011). It has also been suggested that emotional-intelligence can be a “dark-intelligence”, when used to emotionally manipulate others (Nagler, Reiter, Furtner, & Rauthmann, 2015). However, researchers have reported that people with a history of documented anti-social behavior perform less well on measures of decision-making skills (Sorge, Skilling, & Toplak, 2015). Thus, in the context of everyday decision making and in the long run, it is reasonable to assume that pro-social skills relate to better decision-making processes and outcomes compared to “dark-intelligence”. Still, the recent increase in explorations of the dark side of social skills and of the relationship between anti-social behavior and decision making presents an issue that needs to be attended to by decision-making competence research.

**Emotion regulation strategies and decision making**

Overall, the results of this thesis support the idea that the ability to acknowledge, regulate, and express one’s emotions contributes to decision-making efficiency and success. Two measures reflecting such abilities are used in the thesis: self-monitoring and trait-emotional intelligence. In brief, the results demonstrate that the abilities and dispositions of trait-emotional intelligence are associated with positive outcomes, whereas the results for, and effects of, the SMS are less clear. For example, reports of SMS were related to higher levels of perceived stress in Study 2.

A possible explanation of these results may be found in the emotion-regulation literature. In this research, emotion-regulation strategies are described in terms of (behavioral) suppression and (cognitive) reappraisal. Suppression is defined as a strategy that involves efforts to inhibit or control emotion-expressive behavior. Reappraisal, in contrast, is a regulative process that occurs at an earlier stage and concerns a reassessment of emotion-laden information used to control the emotional impact (Gross, 2002). Suppression is
generally considered a less effective strategy than reappraisal, which has also been observed in the context of social interactive decision making (van Wout, Chang, & Sanfey, 2010).

Self-monitoring is an example of suppression whereas the definition of trait-emotional intelligence largely overlap with the definition of reappraisal. Grecucci and Sanfey (2015) proposed that investigating how different emotion-regulation strategies affect peoples’ real-life decisions is an important issue that needs to be given further attention. Hence, future research in this area could include both these two measures (i.e., self-monitoring and trait-emotional intelligence).

The effects of time-approach on decision making

This thesis explored how individual differences in the perceptions of and overall approach to time constitute an important component of a wider definition of decision-making competence. In total, the results clearly support this idea. However, the prediction of variance in the studied indicators for decision-making outcomes was mainly provided by negative time characteristics, such as reports of procrastination behavior and the anxious time-style. Hence, based on these results, it seems more obstructive to not being able to correctly, or subjectively, value time than it is beneficial to value, structure and be persistent in the use of time. Nevertheless, these findings may be somewhat context-dependent.

Arguably, the university students and the professionals in the studies, overall, probably have a profitable approach to time. Consequently, if the effect of time-approach as a component of decision-making competence is explored in a larger and more heterogeneous sample, the results might be quite different. For instance, a community population sample may have more variation in the approach to time. Therefore it is possible that the benefits of time-approach in terms of structuring one’s time and being persistent may provide significant explanation in these samples.

Limitations

Despite considerable efforts to enlarge the samples in the studies of the thesis (i.e., the sample of students and the professional samples), the samples are rather small. Therefore, their size may limit the generalizability of the conclusions. It has been suggested that research on the DMC could more profitably use larger and more heterogeneous samples (Bruine de Bruin et al., 2012).
Yet research using fairly homogeneous samples is also of relevance. Previous research on the DMC has used somewhat homogeneous samples (e.g., Carnevale et al., 2011) or suggested that such samples should be used (Campitelli & Gobet, 2011). Moreover, the hierarchical regression models used in this thesis were chosen to respond to this possible limitation by separating the predictors into separate blocks. Thus, the research for this thesis may provide insights into the relevance of attending to individual differences in DMC among (homogenous) professional samples.

Other possible limitations are the cross-sectional design and the use of self-reports. Future research might benefit from applying a longitudinal design and data collection with peer ratings, for example, of social skills (however, on the usefulness of peer ratings see Weller et al., 2014; Wood & Highhouse, 2014).

Also, a possible concern could be the choice of examining real-life decision-making outcomes using self-reports of life satisfaction. A criticism of this choice derives from the fact that previous research reports a problematic relationship between decision making and life satisfaction by, for example, demonstrating that preferences are unstable (Kahneman et al., 1997) and that people have a limited ability for affective forecasting (Wilson & Gilbert, 2005). However, in this thesis, the approach is distinguished by its exploration of how aspects of overall decision-making competence relate to overall levels of satisfaction and general goal-fulfillment in life. Moreover, if a definition of decision-making competence does not have predictive power for subjective criteria of decision quality, the relevance of this definition of competence could be debated.

Furthermore, a possible limitation concerns methodological biases (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). For example, because the studies collected data by the use of self-reports, there may be issues of self-perception or social desirability biases. In addition, there could also be a possibility of common method biases due to common scale formats and common scale anchors for some social/time measures and dependent variables. The fact that the predictor and criteria variables were measured at the same time may have produced some artificial covariance. Even if this is a general problem for all similar research, this possibility should be noted when considering the results. Future research should attempt to overcome these limitations in methodology.
Finally, the fact that no corrections of p-values were performed for the multiple statistical tests in the correlations can also be regarded a limitation. However, the benefits of corrections such as Bonferroni have been questioned (Perneger, 1998). In this thesis, the repeated studies were performed, and the main relationships were replicated, which to some extent respond to these possible concerns.

Conclusions and directions for future research

In conclusion, this thesis contributes insights to the understanding of the skills/competence and features that explain individual differences in decision making. The main contribution is given by the reports of how differences in social skills/competence and time-approach constitute important components of a widened definition of decision-making competence. Furthermore, the claim is that these personal characteristics relate to, and to some extent even explain, variations in how people approach decision making in terms of decision-making styles.

Decision making is the process of choosing between alternative courses of actions and/or finding a solution to a problem. However, the thesis approaches this process from a broad although not original perspective (e.g., Loewenstein, 2001). Yet this perspective differs from the traditional perspective in decision-making science. More specifically, this thesis recognizes the importance of attending to the social dimension (see, e.g., Keren & Bruine de Bruin, 2003; Lerner & Tetlock, 1999; Stanovich, 2013; Tetlock, 1985, 2002) and subjective experiences of decision making (see, e.g., Higgins, 2000; Keys & Schwartz, 2007; Milkman et al., 2009; Schwarz et al., 2010; Weiss & Weiss, 2010; Wood & Highhouse, 2014). Thus, in this perspective - choosing socially accepted alternatives and solutions to problems that result in better subjective experiences - is a useful and reasonable sound approach to defining decision-making competence and decision quality in peoples’ everyday lives.

Although the thesis argues that decision making should be approached from a wider perspective, it does not claim that a narrower perspective has no importance. However, the narrower perspective has not been neglected in decision-making science whereas the wider perspective to a large extent has.

Based on the results of the present thesis, some ideas about future research directions can be raised. For instance, future decision-making competence research may focus more specifically on the relationship between decision making and self-regulation. Effective
decision making is largely a matter of behavior regulation (e.g., Loewenstein, 2001). In this regard, both the socially-oriented and the time-oriented decision-making competence factors examined in the thesis can be considered to reflect aspects of self-control. Although the relationship between self-regulation/self-control and decision-making skills/competence has been previously studied (e.g., Parker & Fischhoff, 2005; Sorge et al., 2015; Weller et al., 2014), different approaches could complement this research.

For example, the literature on ego-depletion reports that the relationship between self-control and decision making seems to depend on the same underlying cognitive resource (Schmeichel, Vohs, & Baumeister, 2003). The relationship between self-control and decision making is perhaps even more important to note with regards to the reports that the underlying resource can be strengthened (Baumeister, Vohs, & Tice, 2007; Muraven, Baumeister, & Tice, 1999). Yet recent research suggest that reports of impairment in repeated self-control performances (e.g. decision making) reflects a shift in motivation and attention, not a depletion in resource (Inzlicht & Schmeichel, 2012). Thus, in terms of high-lighting the importance of motivation, this development can to some extent be considered consistent with recent developments in DMC-research (e.g. Bruine de Bruin et al., 2015; Strough et al., 2015).

The issue of if and to what extent aspects of decision-making competence can be learned, practiced, and developed probably constitutes the most important question for future research. Education in DMC skills has been explored with positive results only in high-school settings (Jacobsson et al., 2012). When the widened definition of decision-making competence, which this thesis supports, is used, alternatives and possibilities for interventions increase. For example, it has been reported that aspects of self-monitoring (i.e., self-presentation, see Seeley & Gardner, 2003) as well as emotional intelligence (Di Fabio & Kenny, 2011) can be increased by practice. Furthermore, Claessen et al. (2007) reports that training increases time management skills although the effect on performance is less clear.

The results of the research for this thesis do not support the predictive validity of the skills measured by the DMC to provide explanation of the variance in real-life decision-making outcomes. Future research might include other traditional decision-making tasks than the ones currently targeted by the DMC. The exploration of other tasks was proposed in the original work on the DMC (Bruine de Bruin et al., 2007). It should also be noted that some
components of the DMC may be in need of revisions, or at least some consideration, before being targeted in research. For example, the two aspects of framing-effects comprehended by the component *resistance to framing* in the DMC (i.e., attribute and risky-choice) have been reported to differ. Specifically, attribute framing has been suggested to be related to System-1 processes whereas risky-choice framing has been suggested to depend on System-2 processes (Levin, McElroy, Gaeth, Hedgcock & Denburg, 2014). Thus, although framing-effects are important to study, the appropriateness of (always) calculating and using a total-score for framing-effects in DMC-research may be questioned. Presumably, alterations of tasks would be most useful for research on cognitively-oriented decision-making competence related to specific groups or professional domains (see, e.g., Carnevale et al., 2011). Related to this, a research possibility could be the development of a version of the DMC designed for educated samples (see e.g. Cokely et al., 2012).

To acquire a deeper understanding of general decision-making competence, the relevance of performance on traditional decision-making tasks (the DMC) as well as individual differences in social skills and time-approach should be explored in diverse contexts and with diverse samples. This research could include the outcome measures used in the studies of this thesis, as well as others. Such explorations may help to further develop the construct validity for decision-making competence research by examining which criteria of decision quality that measures of decision-making competence can or cannot explain. In addition, as emphasized by Campitelli and Gobet (2010), future research should explore how decision-making competence relates to specific (i.e., expert) decision-making competence.

Finally, future research could look at the usefulness of attending to other aspects of social skills and time-approach than those studied in this thesis. Other individual characteristics, theoretically related to the ability to make good decisions, could also be explored.
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