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Temporal focus, temporal distance, and mind-wandering valence: Results from an experience sampling and an experimental study

Maitta Spronken [a,*], Rob W. Holland [a], Bernd Figner [a,b], Ap Dijksterhuis [a]

[a] Behavioural Science Institute, Radboud University, Postbus 9104, 6500 HE Nijmegen, The Netherlands
[b] Donders Institute for Brain, Cognition and Behaviour, Radboud University, The Netherlands

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ABSTRACT

When mind-wandering, people may think about events that happened in the past, or events that may happen in the future. Using experience sampling, we first aimed to replicate the finding that future-oriented thoughts show a greater positivity bias than past-oriented thoughts. Furthermore, we investigated whether there is a relation between the temporal distance of past- and future-oriented thoughts and the frequency of positive thoughts, a factor that has received little attention in previous work. Second, we experimentally investigated the relation between temporal focus, temporal distance, and thought valence. Both studies showed that future-oriented thoughts were more positive compared to past-oriented thoughts. Regarding temporal distance, thoughts about the distant past and future were more positive than thoughts about the near past and future in the experiment. However, the experience sampling study did not provide clear insight into this relation. Potential theoretical and methodological explanations for these findings are discussed.

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1. Introduction

We tend to think about something else than the activity we are currently engaged in on a regular basis. Our mind may wander off to our plans for the weekend while reading a long method section, or thoughts about an incident at work may pop up into our mind while watching a movie. Schooler et al. (2014) define mind-wandering as "a common everyday experience in which attention becomes disengaged from the immediate external environment and focused on internal trains of thought" (p. 1). According to estimates based on experience sampling and lab studies, people spend 25–50 percent of their time mind-wandering (Schooler et al., 2014).

When people engage in mind-wandering, the temporal focus and temporal distance of their thoughts may vary: Thoughts may wander off to events that happened in the near or distant past, or to events that may happen in the near or distant future. Previous research showed that mind-wandering is more frequently directed toward the future than toward the past, and more frequently directed toward the near past and future than toward the distant past and future (Stawarczyk, Cassol, & D'Argembeau, 2013; Stawarczyk, Majerus, Maj, Van der Linden, & D'Argembeau, 2011). As such, it has been proposed that

* Corresponding author.
E-mail addresses: m.spronken@psych.ru.nl (M. Spronken), r.holland@psych.ru.nl (R.W. Holland), b.figner@psych.ru.nl (B. Figner), a.dijksterhuis@psych.ru.nl (A. Dijksterhuis).

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mind-wandering plays an important role in autobiographical planning and problem-solving (e.g. Baird, Smallwood, & Schooler, 2011; Mooneyham & Schooler, 2013; Ruby, Smallwood, Sackur, & Singer, 2013; Smallwood, Nind, & O'Connor, 2009). Furthermore, mind-wandering may entail negative, neutral, or positive thoughts. While people's minds wander more often to pleasant topics than to neutral or negative ones in general (e.g. Killingsworth & Gilbert, 2010), research in the mental time travel literature suggests that this positivity bias is greater for future-oriented thoughts than for past-oriented thoughts (e.g. Andrews-Hanna et al., 2013; Berntsen & Jacobsen, 2008; Finnbogadóttir & Berntsen, 2013; Newby-Clark & Ross, 2003).

Whereas previous studies have investigated the relation between temporal focus and thought valence, it is unclear whether temporal distance affects the valence of one's thoughts. Thoughts about the near past and future may be mostly concerned with relatively concrete daily hassles and joys (e.g. a flat tire or a dinner with friends), whereas thoughts about the distant past and future may largely be concerned with relatively abstract events (e.g. obtaining tenure or getting married). This difference in abstraction level may in turn influence the frequency of negative and positive thoughts.

In the next section, we review earlier studies on the relation between temporal focus and thought valence. While previous studies provide valuable insight into this relation, some methodological limitations of these studies were identified. Therefore, we propose a potentially more optimal method for investigating the relation between temporal focus and mind-wandering valence in people's daily lives: experience sampling. Following this, we discuss how temporal distance may influence the valence of one's thoughts. Temporal focus and temporal distance have not been investigated simultaneously in relation to the frequency of negative and positive thoughts before.

1.1. Temporal focus and mind-wandering valence

To the best of our knowledge, the relation between temporal focus and the valence of thoughts has received only limited attention in the mind-wandering literature. One lab study showed that thoughts with no particular future- or goal-oriented function, such as daydreaming or boosting positive emotions, were more positive than thoughts that did have a clear future- or goal-oriented function, such as problem solving or planning (both thought types could have a past or a future orientation; Stawarczyk et al., 2013). However, this study did not reveal a significant difference in affective valence between future-oriented mind-wandering and either non-future-oriented mind-wandering in general or past-oriented mind-wandering specifically (see footnote 1 in Stawarczyk et al., 2013). Furthermore, one experience sampling study examined characteristics of mind-wandering in Chinese daily lives and included measures of both temporal focus and emotional valence (Song & Wang, 2012). However, no results were reported regarding the relation between temporal focus and emotional valence.

Related to the present research, past-focused mind-wandering has been linked to prior sad mood (Poerio, Totterdell, & Miles, 2013; Smallwood & O'Connor, 2011; see also Stawarczyk, Majerus, & D'Argembeau, 2013). Past-other-oriented mind-wandering has also been related to subsequent negative mood, even when one's current thought was positive, while future-self-oriented mind-wandering has been related to subsequent positive mood, even when one's current thought was negative (Ruby, Smallwood, Engen, & Singer, 2013). Another study found a marginally significant relation between prior feelings of anxiety and future-oriented mind-wandering (Poerio et al., 2013). Taken together, these studies seem to suggest an association between mind-wandering about the past and negative affect, and an association between mind-wandering about the future and positive affect, as well as anxiety. However, these studies did not directly investigate the relation between temporal focus and mind-wandering valence, but investigated the relation between temporal focus and prior/subsequent mood. Importantly, mind-wandering valence and subsequent mood seemed to be partly independent, depending on the socio-temporal content of the wandering mind.

Several studies in the mental time travel literature have investigated the relation between temporal focus and thought valence specifically. Mental time travel involves reliving events in one's past and preliving possible events in one's future through autobiographical memories and future projections (Finnbogadóttir & Berntsen, 2013; Tulving, 2002). Although mind-wandering and mental time travel are not the same, especially the literature on involuntary (as opposed to voluntary) mental time travel may provide insight in the relation between temporal focus and mind-wandering valence. Namely, involuntary autobiographical memories and future projections may be seen as instances of the broader category of mind-wandering (Johannessen & Berntsen, 2010; Plimpton, Patel, & Kvavilashvili, 2015). In fact, the instructions used in mind-wandering research and involuntary mental time travel research are often rather similar. As such, Plimpton et al. (2015) have recently proposed to bridge these 'related but separate' (p. 261) areas of research.

In a diary study by Finnbogadóttir and Berntsen (2013) participants were asked to record the valence of involuntary autobiographical memories on a single day. On another day, participants did the same for autobiographical future projections. While the frequency of positive thoughts was higher than the frequency of negative thoughts for both memories and future projections, the positivity bias was greater for the future. Furthermore, Andrews-Hanna et al. (2013) asked participants to report 36 thoughts that had been on their minds recently, and to rate these thoughts on several dimensions, including valence. Future-oriented thoughts were on average more positive than past-oriented thoughts. In a diary study by Berntsen and Jacobsen (2008), participants were asked to reflect on two involuntary and two voluntary representations about past events on some days, and two involuntary and two voluntary representations about future events on other days. They found a positivity bias for the future for both voluntary and involuntary thoughts. Finally, in a lab experiment by Newby-Clark and Ross (2003), participants reported up to ten significant past as well as future events, and subsequently rated how they felt or would feel during these events. The average positive affect (which is likely to be related to thought

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