

The Prima Facie View of Perceptual Imagination

Andrea Rivadulla-Duró

Swiss Centre for Affective Sciences (CISA), University of Geneva

“A mind that is stretched by a new idea or sensation never
shrinks back to its former dimensions.”

Oliver Wendell Holmes, *Autocrat of the Breakfast Table* (1858)

Abstract. Perception is said to have assertoric force: It inclines the perceiver to believe its content. In contrast, perceptual imagination is commonly taken to be non-assertoric: Imagining winning a piano contest does not incline the imaginer to believe they actually won. However, abundant evidence from clinical and experimental psychology shows that imagination influences attitudes and behavior in ways similar to perceptual experiences. To account for these phenomena, I propose that perceptual imaginings have *implicit assertoric force* and put forth a theory—the Prima Facie View—as a unified explanation for the empirical findings reviewed. According to this view, mental images are treated as percepts in operations involving associative memory. Finally, I address alternative explanations that could account for the reviewed empirical evidence—such as a Spinozian model of belief formation or Gendler’s notion of *alief*—as well as potential objections to the Prima Facie View.

Keywords: perceptual imagination, sensory imagination, mental imagery, belief, association, Spinozian Model of belief, reality monitoring, imagination inflation

1. Imagining Experiences: World-Sensitivity and Assertoric Force

At the beginning of *Mimesis as Make-Believe* (1990), Walton introduces the following case:

“Fred finds himself, in an idle moment, alone with his thoughts. Feeling unsuccessful and unappreciated, he embarks on a daydream in which he is rich and famous. He

calls up images of applauding constituents, visiting dignitaries, a huge mansion, doting women, and fancy cars. But alas, reality eventually reasserts itself and Fred gets back to selling shoes. (...) Before proceeding we should note the *independence of imagining from truth and belief*. Much of what Fred imagines is false and is known by him to be false”. (Walton 1990:13, emphasis mine).

In Walton’s example, Fred uses his imagination to distance himself from reality. It is well-established that imagining can evoke emotions akin to those experienced during actual events (Holmes & Matheus 2010). As Fred imagines, he might momentarily feel joy. Nevertheless, setting aside these immediate emotional responses, imagining is typically considered harmless from a long-term perspective. As Walton emphasizes, Fred is aware that his imagined episode is fictitious and does not reflect changes in the real world (i.e. it lacks world-sensitivity, Badura & Kind 2021). Consequently, Fred will not attribute evidential value to the imagined, nor will he adjust his attitudes based on it.

Following Walton’s observation, philosophers claim that perception has assertoric force—it inclines the perceiver to believe its content—while sensory imagination lacks this force (Chasid & Weksler 2020). This distinction seemingly prevents imaginings from broadly influencing cognition and behavior. This paper challenges this prevalent intuition by presenting extensive clinical and empirical evidence showing that imagination impacts attitudes and behavior in more insidious ways than direct belief formation. I will argue that characterizing imagination as non-assertoric fails to fully capture its functional profile. Research suggests that, post his imaginative lapse, Fred likely resumes work having—at least slightly—modified his attitudes about the world. For instance, he might now take the imagined scenario to be more probable (Carroll 1978), idealize the represented goals and perceive them as easier to achieve (Kappes, Oettingen, & Mayer 2012), or slightly adjust his self-concept (Kappes & Morewedge, 2016).

The question then becomes how imagination is nonetheless different from perception (and it undoubtedly is) in terms of its innocence. The aim of this paper is 1) to articulate the functional profile of imagination as a middle ground between no influence and perception-like influence, and 2) to provide an account of the cognitive architecture that underlies this functional profile. I will argue that the psychological phenomena reviewed can be given a unified explanation by assuming that visual mental imagery is treated akin to percepts in

operations involving associative memory. As a result of what I name the *prima facie* processing of mental images, perceptual imaginings have *implicit assertoric force*. This constitutes a central tenet of the view of imagination—the Prima Facie View—introduced in this paper. According to this view, perceptual imagination is not inconsequential, as it holds meaningful cognitive implications.

The notion of imagination operative throughout the paper is also referred to as sensory or experiential imagination (Dokic & Arcangeli 2015; Macpherson & Dorsch 2018). In such imaginings, we recreate a particular experience (e.g., *swimming* in the Mediterranean Sea) by means of mental imagery, which confers the imagining of a quasi-sensory phenomenology.¹

In the next section, I introduce the Prima Facie View and compare it to the view on the functional role of imagination implicit in the literature. Section 3 reviews clinical and empirical evidence on perceptual imagination's effects. Section 4 details the Prima Facie View and unpacks its central claims. Section 5 offers a comprehensive analysis of the reviewed phenomena. Finally, Section 6 examines alternative explanations, while Section 7 addresses potential objections.

2. The Innocent View vs. the Prima Facie View

It is widely accepted that healthy individuals can fantasize and daydream without attributing evidentiary value to imagined content. The impact of imagination on attitudes and behaviors is typically considered an exception to its normal functional profile. I will refer to the View according to which the effects of imagination are limited to specific, exceptional cases, as the Innocent View.

Given the diversity of perspectives on imagination, over-characterizing the Innocent View would be an unfair idealization. Here, I will provide a minimal characterization reduced to the following claim. According to the Innocent View, perceptual imagination influences our attitudes and behavior only under particular circumstances, including: 1) specific settings (e.g., fiction, active pretense), 2) epistemic uses (e.g., problem-solving involving mental

¹ Although mental imagery covers all five senses, this paper focuses on evidence against the innocence of mental imagery in the visual modality. Further arguments would be necessary to extend this conclusion to other modalities.

imagery), and 3) error cases (i.e., reality monitoring errors). The Innocent View is, albeit implicitly, the predominant view in the philosophical literature on imagination (Chasid & Weksler 2020). This becomes evident when looking at where researchers had drawn their attention.

Efforts have been devoted to explaining what is considered a surprising phenomenon, that is, why imagination causes emotion in the case of fiction, thereby presupposing the Innocent View. A line of inquiry has explored the relationship between fiction, beliefs, and emotions (Nichols 2006; Stock 2017; Weinberg & Meskin 2006; Friend 2016). Researchers have also explored instances where imagination led to actions in the context of active pretense, also because this is considered exceptional (Gendler 2010; Langland-Hassan 2012; Schellenberg 2013). Remarkably, the attention drawn to these cases does not lead these authors to conclude that imagining experiences has, by default, consequences. These cases are rather seen as exceptional and surprising.

Philosophers have also examined the role of imagination in shaping attitudes and behavior when we use it for an epistemic purpose and grant it justificatory force (Badura & Kind 2021). For instance, in problem-solving contexts we may transfer our perceptual abilities to our imaginative processes, which might then guide us in forming beliefs and shaping decisions. Consider evaluating whether a river is crossable: if crossing appears feasible when perceptually imagining it, we may come to believe it is possible and decide to cross (Williamson 2016). Similarly, when determining if a sofa can fit through a doorway, visualizing and mentally rotating the sofa can help us decide the best fit (Shepard & Metzler 1971). Philosophical debates on epistemic uses of imagination have centered on the normative question of whether we can gain knowledge through imagination, be it about metaphysical possibilities (Kung 2010) or real-world scenarios (Myers 2021). A prevalent view is that imagination can occasionally serve epistemic ends, primarily when we skillfully impose constraints to ensure its alignment with reality (Kind 2016).

Lastly, extensive research has been devoted to exceptional cases in which imagination has assertoric force as a result of reality monitoring errors. A reality monitoring error occurs when an individual mistakes an imagined experience for a real one. In this suboptimal circumstance, imagination has assertoric force, leading to the formation of beliefs and guiding behavior. Two kinds of reality monitoring errors are commonly identified:

hallucinations and Imagination Inflation. In hallucinations, an internally generated experience is evaluated as real, leading to similar doxastic consequences as perception (Dijkstra, Kok, & Fleming 2022). In Imagination Inflation, the subject mistakes an episode or action she imagined in the past for one that actually occurred (Garry et al. 1996; Goff et al. 1998; Loftus 2003). This may lead to false autobiographical beliefs by inflating the confidence that an event happened in the past. But apart from reality monitoring errors, perceptual imagination is traditionally understood as a playground where one can entertain oneself without long-lasting consequences upon returning to reality.

In the next section, I examine well-established clinical and empirical evidence showing that imagination can mimic psychological and behavioral responses similar to those of perceptual experiences. Crucially, these effects are independent of reality monitoring errors. In the cases discussed, subjects accurately monitor their imaginings as such, both during the act of imagining and when recalling the imagined episode. Moreover, these imaginings do not involve fiction or pretense. Lastly, in the empirical findings to be discussed, subjects do not grant imaginings a justificatory role in shaping the resulting changes in attitudes and behavior. Contrary to what happens in epistemic uses, in the cases reviewed subjects do not modify their attitudes *because* they take imaginings to justify these changes. As a result, the phenomena reviewed appear mysterious and remain unexplained when examined from the perspective of the Innocent View.

The Prima Facie View emerges as a candidate for explaining the mechanism behind these phenomena. The distinction between the Innocent View and the View here proposed is not a matter of degree. I claim that not only imagination influences us in a few more cases than previously assumed, but that the pervasiveness of its effects suggests that it does so because of architectural constraints. Even if not always optimal from an epistemic standpoint, the effects observed, as per the Prima Facie View, arise from a well-functioning system, in accordance with the architecture of imagination. While the theory will be detailed in Section 5, at this point it is helpful to preview its central claims. The claims are stated here in the shortest, most precise form, and will be fully explained in the following sections. What I call the Prima Facie View consists of the following claims:

1. **Functional Claim:** Clinical and empirical evidence compel us to regard the pervasive effects of imagination on our attitudes, emotions, and behaviors as outcomes of the normal functioning of our faculties, rather than as exceptions or errors.
2. **Architectural Claim:** The aforementioned effects can be explained if we assume that visual mental imagery is processed *Prima Facie* (i.e. taken at face value) by associative memory. That is, internally generated visual imagery is treated as percepts in operations involving associative memory, regardless of source information signaling that they have been internally triggered or other data indicating their simulational nature.
3. **Imagination has implicit assertoric force:** Due to its *Prima Facie* processing, perceptual imagination has, by default, implicit assertoric force. This causes sensory imaginings to a) trigger associative reactions similar to perception (*immediate* effects of imagination), and b) disrupt associative memories that originated in perceptual experiences, leading to long-lasting consequences (*enduring* effects of imagination).²

The psychological phenomena reviewed in the following section constitute a sample of what I call *Prima Facie* effects. These effects motivate the view outlined in this paper, which both explains and predicts them.

3. Phenomena To Be Explained

3.1 Imaginal Exposure as a Treatment for Phobias

Phobic individuals avoid or flee from situations where the fear-inducing stimulus is present. This flight response is reinforced by the subsequent reduction in fear and anxiety, perpetuating the phobia (Watson & Rayner 1920; Field 2006). Avoidance prevents phobic individuals from learning that their feared outcomes often do not materialize or are not as terrible as imagined. Facilitating this learning is the purpose of exposure therapy, the leading treatment for specific phobias (Eaton et al. 2018). In this behavioral technique, the patient gradually approaches the fear-inducing stimulus. Over time, repeated exposure to the fear-

² Examples of immediate effects of imagination include emotional reactions experienced while imagining; examples of enduring effects are the long-lasting behavioral and attitudinal changes.

inducing stimulus (e.g., a dog) in the absence of the predicted negative outcome (e.g., a bite) weakens the conditioned fear response, until eventually the stimulus no longer elicits fear.

The point I want to emphasize here concerns the efficacy of *imaginal* exposure therapy, a well-established cognitive-behavioral treatment used with phobic patients as an alternative or “warm-up” toward a strongly feared *in vivo* exposure (Anthony & Swinson 2000). This mode of treatment differs from *in vivo* exposure in that exposure is merely imagined. In therapy, patients are asked to visualize, in detail and as vividly as possible, an encounter with the fear-inducing stimulus until fear and anxiety begin to subside. For instance, a patient with dog phobia would imagine interactions with dogs where her feared outcomes do not occur (e.g., she is not bitten).³

Relevant to our discussion, evidence shows that the mere imaginal confrontation with the feared stimulus effectively 1) induces a fear response (Grayson 1982) and 2) contributes to fear extinction—the lessening of the conditioned fear response—over successive trials. Crucially, it does so a similarly as *in vivo* exposure (Choy et al. 2007; Hackmann, Bennett-Levy, & Holmes 2011; Rentz et al. 2003; Wolitzky-Taylor et al. 2008). Visualizing positive interactions with the phobic stimulus can be as effective as interacting with the physical stimulus in extinguishing the conditioned fear response (Dadds et al. 1997; Redaan, Wager & Schiller 2018, Mertens et al. 2020)⁴

It is essential to highlight that, during imaginal exposure, no new real evidence is encountered regarding the harmlessness of dogs. The patient simply envisions a positive interaction with a dog, and the imagining is under their control. Furthermore, patients correctly monitor such imaginings (i.e., the efficacy of imaginal exposure is not mediated by monitoring errors). And yet, merely imagining a positive interaction with the phobic stimulus influences patients’ expectations, emotional responses, and behavior when confronted with the actual stimulus.

³ Imaginal exposure offers many advantages over *in vivo* exposure, including convenience (it can be conducted easily in a therapist’s office) and flexibility (imaginal techniques can be adapted to fit the idiosyncratic situations that evoke the patient’s fear).

⁴ Imaginal exposure, enhanced by Virtual Reality has also demonstrated significant efficacy in therapeutic contexts (Botella et al. 2017). Additionally, other imagery-based methods, such as systematic desensitization, have proven beneficial. In this approach, patients learn to relax their voluntary muscles while mentally confronting their feared stimuli (Rachman 1967).

In conclusion, imaginal exposure shows that perceptual imagination a) elicits reactions while imagining similar to those triggered by the analogous perceptual experience (e.g., fear) and b) disrupts associations originated in perceptual experiences, resulting in long-lasting consequences (e.g., behavioral changes). Remarkably, these effects occur even when the subject is fully aware that they have not been exposed to new, real-world evidence. Imaginings seem to be integrated, at a subpersonal level, in a manner akin to observations possessing evidentiary value, leading to the aforementioned effects.

3.2 Fantasies of Self-Achievement: Effects on Motivation, Effort, and Success

“The Hopes so juicy ripening-
You almost bathed your Tongue”

Emily Dickinson

Another intriguing phenomenon concerns the effects of imagination on motivation and achievement. In *The Undoing Project*, Michael Lewis (2016) reports a rule Daniel Kahneman established for himself during his childhood:

“As a child during the war, he’d cultivated an active fantasy life. He would play out elaborate scenes with himself at the center of them. He imagined himself single-handedly winning the war and ending it, for example. But because he was Danny, he made a rule about his fantasy life: *He never fantasized about something that might happen.* He established this private rule for his imagination once he realized that, *after he had fantasized about something that might actually happen, he lost his drive to make it happen.* His fantasies were so vivid that ‘it was as if you actually had it,’ and if you actually had it, why would you bother to work hard to get it?” (Lewis 2016: 443, emphasis mine)

Empirical studies on motivation differentiate between two ways of thinking about the future: positive expectations—i.e., judging a desired outcome as likely—and positive fantasies—i.e., experiencing one’s fantasies about a desired future positively (Kappes & Morewedge 2016). Positive fantasies—the kind that Kahneman avoided—predict low success and effort in several domains (Kappes, Oettingen, & Mayer 2012).

In a study, Oettingen and Wadden (1991) investigated the impact of expectations and fantasies in a one-year behavioral weight reduction program. They found that these variables predicted weight change in opposite directions. Optimistic expectations of reaching one's goal combined with weight-related negative fantasies favored weight loss. On the contrary, subjects with pessimistic expectations combined with positive fantasies had the poorest treatment outcome. In line with these findings, Oettingen and Mayer (2002) found that positive expectations about earning a high grade predicted high effort and successful performance, but positive fantasies of achievement predicted low effort and performance.

Similarly, positive future fantasies have been shown to predict lower grades at the end of the academic program, even when controlling for academic competence, expectations of achievement, and self-discipline (Kappes, Oettingen, & Mayer 2012). When positive fantasies are induced, they still result in a lower energy investment than more pessimistic or neutral fantasies (Kappes & Oettingen 2011). Crucially, these effects occur even when subjects accurately monitor their imaginings.

In evaluating this line of research, Kappes and Morewedge (2016) contend that imagined achievement may sometimes serve as a substitute for real achievement. In their words, “mental simulations make people feel, to some extent, like that event has actually happened. (...) Just as people give themselves credit for their good intentions (Kruger & Gilovich 2004), mentally simulating success may allow people to feel successful without effortfully pursuing their goals” (Kappes & Morewedge 2016: 413).

In sum, indulging in imaginings of a bright future has two key effects. First, it produces immediate effects resembling those of experiencing genuine accomplishments (e.g., happiness while imagining). Second, it leads to enduring consequences akin to actual success (e.g., a decrease in the motivation to pursue a goal). These findings highlight the intricate influence of imaginings on emotions, motivation, and effort, even when individuals are aware that their imaginings do not constitute evidence about their actual achievements or competence.

3.3 Imaginal Contact Paradigm

According to the Contact Hypothesis (Allport 1954), interaction between members of opposing groups fosters positive attitudes and reduces hostility.⁵ Recently, the Imaginal Contact Hypothesis (Crisp & Turner 2009) posits that simply imagined contact with outgroup members can improve intergroup attitudes, providing a viable alternative when real contact is unfeasible.

In the Imaginal paradigm, participants imagine a positive interaction with an outgroup member.⁶ Numerous studies demonstrate that simulating social contact with an outgroup member is sufficient to improve intergroup attitudes (for a review, see Miles & Crisp 2014). In Turner, Crisp, and Lambert's (2007) study, young participants who envisioned positive interactions with older individuals exhibited reduced levels of intergroup bias, as evidenced by their expressed preference for future pairings with either young or elderly individuals in subsequent studies. Similarly, heterosexual men had a more positive attitude toward gay people after imagining a positive interaction with a gay man (Turner, Crisp & Lambert 2007). In Turner and Crisp (2010), participants who imagined talking to a Muslim stranger showed more positive implicit attitudes towards Muslims than the control condition.

Imaginal contact has also been used to change the attitudes of people high in right-wing authoritarianism (hereinafter RWA; Asbrock et al. 2013). Following imagined contact, participants high in RWA showed fewer negative emotions toward Turkish people (Study 1) and a higher willingness to engage in future contact with Romani people (Study 2). The effect has also been shown in children (Cameron et al. 2011). Children who engaged in simulated contact with a child with a disability exhibited reduced intergroup bias in their attitude, competence and warmth ratings compared to the control group. For 5–6-year-olds, imagined contact resulted in more positive intended friendship behavior towards children with disabilities.

⁵ For a meta-analysis on the robust effect of contact on prejudice, see: Pettigrew & Troop 2006.

⁶ An example of scenario participants are prompted to envision is the following: “One day you find yourself on a busy train. You get a seat and start reading [...]. At the next stop, an older Black man boards the train and sits down next to you. After a few minutes, the man looks at what you are reading and comments that it is one of his favorite books. This begins a discussion in which you share your thoughts on the book and what you both enjoyed about it. The conversation meanders, and by the time you get off the train, 30 minutes later, you have discussed a whole range of topics, from the stresses of having to commute to work every day, to what neighborhood you live in, to what your children’s favorite subjects are at school.” (Crisp & Turner 2009: 231)

In summary, simply visualizing positive interactions enhances perceptions of the outgroup and diminishes intergroup bias, resembling the impact of genuine positive interactions. Notably, the literature does not report reality monitoring errors in these studies. Although participants do not attribute justificatory force to their imaginings, these imaginings are integrated as if they constitute evidence about the real world, resulting in effects that closely parallel those of real positive encounters with outgroup members.

3.4 Imagination and Probability Judgments

Experimental evidence indicates that imagining an event raises our subjective subsequent estimation of its likelihood. This effect of imagination parallels real experiences, as we often draw on our past experiences to predict what might happen in the future (Blackwell 2023).

In a seminal study by Carroll (1978), voters imagining Carter's victory subsequently believed it more probable than those who pictured Ford winning. Likewise, participants asked to envision a successful football season for a team were more likely to predict afterwards a major bowl bid than those who imagined a poor season (Carroll 1978). Conceptually replicating Carroll's findings, further studies investigated the effects of imagining events of a personal nature. Participants who pictured themselves winning a contest or being arrested were subsequently more inclined to believe such events would happen to them, compared to controls (Gregory, Cialdini, & Carpenter 1982). In a similar vein, those who imagined being in a car accident held a greater expectation of such an incident occurring than the control group (Gregory, Burroughs, & Ainslie 1985).

Probability judgments have traditionally been linked to the 'availability heuristic' (Tversky & Kahneman 1973; Sherman et al. 1985). When estimating the likelihood of an event, individuals base their judgments on the ease with which they can generate relevant instances that align with the outcome. In the absence of defeaters, ease of processing is detected metacognitively and used in making judgments of likelihood. The mediating role of ease of imagery in probability estimates is well illustrated in Sherman et al. (1985): Participants' judgments of ease of imagining a disease paralleled judgments of the likelihood of contracting the disease.

The effect under consideration is as follows: *Imagining* an event at t1—similarly to *perceiving* the event— influences how easily we can generate a similar event at t2. In the absence of defeaters, this will raise our estimated probabilities regarding the event imagined at t2. The pool of past experiences contributing to ease of processing when imagining an event encompasses both 1) real experiences and 2) imagined experiences. When making probability assessments using the availability heuristic, we do not disentangle the contributions of previously *imagined* and actually *perceived* events to the ease of processing. To quote Carroll: 'Under the availability hypothesis, the perseverance result would be due to the greater ease of generating relevant instances when an instance has already been generated, regardless of whether the event was imaginary or real, inferred or observed, true or later discarded' (Carroll 1978: 89, emphasis mine). By enhancing ease in recalling or imagining an event, previously *imagined* events end up contributing as evidentiary samples in the probability estimation process.⁷

Studies do not report reality monitoring errors; previously imagined events do not sway probability estimates because people mistakenly recall them as actual occurrences. Instead, imagined events indirectly shape the estimated probability of future events, playing a role analogous to that of observed events in influencing probability estimates.

The implicit attribution of evidentiary value to imagined episodes is supported by another experimental paradigm. In Shidlovski, Schul, & Mayo (2014), participants underwent a guided imagination procedure, imagining a specific event.⁸ Researchers then measured the

⁷ An alternative explanation suggests that imagination might simply bias attention toward certain contents (i.e., those consistent with the event), making them more accessible for reasoning when judging probabilities. However, this explanation cannot account for effects of imagination over extended periods of time. For instance, effects on attitudes towards traffic laws after imagining being involved in a car accident were measured several hours after the imagining (Gregory, Burroughs, & Ainslie 1985), and induced changes on expectations after imagining an event appeared undiminished after a 3-day period (Anderson 1983; Experiment 2). Other evidence suggests that attentional biases alone cannot explain the effects. In studies by Carroll (1978), some participants who imagined an outcome were also asked to list reasons supporting that outcome before estimating its likelihood. If imagination influenced probability assessments through an attentional bias toward event-consistent contents, this additional step would likely accentuate this bias, and therefore, further influence participants' expectations. Yet, there was no additional effect on expectations by asking subjects to list reasons explaining the outcome (Carroll 1978: 94). I am grateful to an anonymous reviewer for prompting the consideration of this alternative explanation.

⁸ A fragment of the guided-imagination task: "Imagine that there are two cards lying face down in front of you/ You pick up one of the cards/And see the 4 of diamonds/ You look at the red diamonds/ Two are placed one beside the other on the upper half of the card/ And two are on the lower half of the card/ You see the four of diamonds clearly..." (Shidlovski, Schul, & Mayo 2014: 519)

Implicit Truth Value (ITV) of the event using the Autobiographical Implicit Association Test (Sartori et al. 2008). This test assesses the truth of autobiographical events implicitly. It assumes that when true autobiographical events share the response key with true sentences, reaction time will be faster than when true autobiographical events share the response key with false sentences. Participants responded more quickly when the sentences about previously imagined events shared the response key with true sentences than with false sentences. Authors concluded that imagining an event increases its “implicit truth value” similar to experiencing the event, even if people acknowledge that the event did not occur.

3.5 Effects of Imagination on Intentions and Behavior

Performing an action can heighten our intentions for undertaking similar actions in the future and influence our subsequent behavior (Olson & Stone 2014). This can occur through various mechanisms: from strengthening our positive attitudes towards the action to promoting self-consistency. In a similar vein, merely imagining performing an action has been shown to affect our intentions about carrying on similar actions in the future and, occasionally, promote actual behavior.

Participants who imagined donating blood, changing their major, or taking a vacation increased their intentions of doing so (Anderson 1983). Furthermore, the more frequently they imagined performing the aforementioned action, the more intention change was produced. The effect of imagined actions on intentions has also been replicated for moral behaviors: Picturing oneself carrying out harmful actions resulted in participants indicating an increased probability of engaging in such actions in the future (Morris, O'Connor, & Cushman 2022). Gregory et al. (1982) found that the effects of imagining an action influenced not only intentions but also behavior. Homeowners who imagined themselves using a cable TV service were more likely to subscribe to such a service when requested to do so weeks later. While only 19.5% of residents who simply heard about the product's features signed up, a significant 47.4% of those who visualized using the service did so.

Imagined actions can parallel the ways in which analogous actual actions enhance intentions and behavior. Three mechanisms can underlie this effect: 1) an attitudinal change towards the action (Gregory et al. 1982), 2) the increased availability of behavioral scripts, which may

heuristically influence intentions (Anderson 1983), and 3) the aim to maintain consistent self-perception regarding our attitudes and behavior.

For the first mechanism, consider the study on a TV cable service (Gregory et al. 1982). By promoting positive attitudes towards the service after imagining using it, imagination increases one's intention to use the service in the future and actual behavior (i.e., ordering the service). As for the availability of behavioral scripts, when other factors are held constant, one's intention to perform a given action can be influenced by the ease with which they can imagine performing that action (Anderson 1983). For instance, our intention to donate blood will be influenced by how easily we can imagine ourselves donating blood. In the case at hand, imagining performing an action at time t_1 can shape intentions at time t_2 by enhancing the ease of imagining performing the action at that later time. Regarding our aim to maintain consistency, when subjects repeatedly imagine performing an action, they can come to believe they are more likely to perform it due to either the aforementioned attitudinal change or the ease of retrieving the behavioral script. This might cause them to develop a more favorable attitude towards that action to uphold a consistent self-perception. This mechanism mirrors the effects of observing our own behaviors, which can shape our attitudes and future actions due to our inclination to remain consistent with our past actions (Bem 1972; Olson & Stone 2014).

In summary, imagining performing an action can influence our intentions for future actions in a manner akin to actually performing the action. Although imaginings do not provide new evidence about the actual consequences of actions or about us as agents, they nonetheless impact intentions and behaviors similarly to actions performed. Somehow, such imaginings seem to be integrated as if they provide such evidence.

4. The Prima Facie View of Perceptual Imagination

4.1 Functional Claim: On the Unity of Prima Facie Effects

A key shared takeaway within the broad spectrum of literature reviewed is the following: perceptual imagination impacts emotions, behavior, and occasionally beliefs, mirroring effects of perceptual experience. Crucially, these effects do not stem from reality monitoring errors; individuals correctly identify imaginings as such, both during the act of imagining and

when recalling the imagined events. And yet, imaginings exert a causal influence that resembles that of observed evidence.

The Prima Facie View contends that these effects are prevalent enough to be considered as results of the standard operation of our cognitive faculties, rather than being dismissed as anomalies or mistakes. Consequently, it seeks to articulate the functional profile of imagination as a middle way between no influence and perception-like influence.

In addition to the similarities in their outcomes, it is key to show that the heterogeneous effects in the previous section originate from a single cognitive phenomenon. The Prima Facie View proposes that this phenomenon is associative in nature. Although imagination does not have assertoric force as perception, I argue that the effects reviewed can be explained by introducing the notion of *implicit assertoric force*. The implicit assertoric force of sensory imaginings causes them to a) trigger associative reactions similar to those in perception, and b) disrupt associative memories that originated in perceptual experiences, leading to long-lasting consequences. Implicit assertoric force results from visual imagery being processed Prima Facie (i.e. at face value) by associative memory.

In this section, I 1) describe the phenomenon responsible for the enduring, long-lasting effects of imagination, which I term *Disruptive Associationism*, and 2) account for the occasional cases in which imaginings lead to doxastic consequences, appealing to what I term the *Empirical Bias*.

4.1.1 Disruptive Associationism

Disruptive Associationism refers to the phenomenon whereby imaginings can interfere with and modify associations originating from perceptual experiences.

In its origin, associationism as a theory of learning concerned how perceptions (“Impressions”) determined trains of thought (successions of “Ideas”). If two impressions were associated in perception, their corresponding ideas would also become associated. However, a unified explanation of the phenomena presented here amounts to acknowledging that ideas are not only associated based on the sequences of impressions (perceptual experiences) but also based on sequences of ideas (perceptual imaginings). This

last claim is nothing new under the sun: early empiricists acknowledged that mere thought could cause associations: "when two impressions have been frequently experienced (*or even thought of*) either simultaneously or in immediate succession, then whenever either of these impressions or the idea of it recurs, it tends to excite the idea of the other" (Mill 1843: 852, emphasis mine).

But the analysis of the evidence suggests that perceptual imagination does more than merely create associations among its constituent elements. It shows that the associations formed, reinforced, or extinguished inevitably generalize to the real-life counterparts of those elements. Fundamentally, imagination exhibits the ability to modify associations that were initially established through perception. The philosophical challenge herein is to delineate the architecture of imagination that underlies Disruptive Associationism. This task represents the central aim of the Architectural Claim within the Prima Facie View.

4.1.2 From Associations to Beliefs: The Empirical Bias

The Prima Facie View posits that the mechanism underlying the reviewed phenomena is fundamentally associative. Reviewed evidence, nonetheless, shows that imagination can occasionally have an impact on our beliefs about the world, such as those about the perceived likelihood of a given event occurring. However, associative structures, per se, are merely causal relations among mental representations and do not predicate features about events or entities in the world. Saying that two elements are associated amounts just to saying that the activation of one of the elements causes the activation of the other (Mandelbaum 2020). On the contrary, predication is carried by propositional structures, which have structure over and above the mere associative link between its elements, and therefore can express a relation between things in the world. Therefore, additional explanation is required to account for these doxastic effects of imagination as mediated by associations.

A particular feature of associative memory is key at this point. When introspecting an association, its originating source is not provided by the associative memory itself.⁹ I coin as the *Empirical Bias* our inherent predisposition to assume, barring contradictory evidence, that introspected associations are anchored in reality, that is, that they originated from perceptual

⁹ This is not the case other long-term memory stores, such as episodic memory, which signals—accurately or inaccurately—the source of the retrieved experience (i.e., perception).

experiences. Nonetheless, research shows that they can also have its origin in perceptual imaginings. The Empirical Bias might lead us to form beliefs in introspecting associations. The Bias need not be readily discerned through introspection; instead, it constitutes an automatic predisposition.

Consider the following example: I had a neighbor who frequently tended to his garden with a shovel during nighttime hours. I frequently saw him from my window, carrying vegetables from the garden, and associated him with bucolic activities. My partner, however, prompted me to imagine that each time our neighbor was shoveling at night, he was, in fact, burying a corpse. After vividly envisioning this unsettling scene multiple times, the neighbor took on a negative valence, as empirical evidence predicts (Lewis et al. 2013; Benoit et al. 2019).¹⁰ Although I had no evidence against my neighbor, the mere thought of future interactions with him incited an unsettling feeling, as frightening images came to mind. The emotional responses triggered by the neighbor after repeated imaginings were not innocuous but rather ended up playing a largely “advisory role” in my snap decisions and judgments. My behavioral dispositions towards him implicitly changed; if missing an ingredient for a recipe on a Friday night, I found myself opting to ask some other neighbor. When conversations with friends meandered towards him, my snap response was a cautious 'He does not seem trustworthy.' In sum, the negative affect associated with the neighbor after the macabre imaginings swayed my affect-based judgments, influencing my assessment of his trustworthiness.¹¹ This aligns with evidence demonstrating the prevalent use of feelings as heuristic tools for making judgments and decisions (Angie et al. 2011). According to this line of thought, when making evaluative judgments, people ask themselves, "How do I feel about it?", using triggered emotions as a shortcut to judge a target (Schwarz, 1990; Loewenstein & Lerner 2003).

In the given example, the outcome of the Empirical Bias could be introspected as follows: "If I harbor these feelings toward my neighbor, they must stem from an experience I have had." However, the mere act of imagining an event can alter the valence of its components, potentially influencing subsequent attitudes toward their real-life counterparts. Incorporating the concept of Empirical Bias into our analysis enables a more effective exploration of the

¹⁰ Lewis et al. (2013) show that after conditioning mental images with emotion-evoking stimuli, perceptual stimuli of the same content produce the associated emotional response, indicating generalization from imagery to perception.

¹¹ Specific effects of evaluative conditioning on facial judgments of trustworthiness can be found in: Kocsor & Bereczkei 2017.

relationship between imagination and heuristically-driven judgments and behaviors. This approach illuminates the associative nature of the phenomena under scrutiny and provides a comprehensive understanding of the occasional doxastic effects of imagination.

In the following section, I give a detailed account of the Architectural Claim of the Prima Facie View. According to it, the described functional profile of imagination is explained—and indeed predicted—if we assume that visual mental imagery is processed Prima Facie (i.e., at face value) by associative memory.

4.2 Architectural Claim

4.2.1 Prima Facie Processing

According to the view presented here, visual mental imagery is processed Prima Facie by associative memory. This means it is processed based on its mere appearances, devoid of nuances regarding the source from which it originates. Imaginings, stripped of information about the source generating them, are read at face value—as if they arise from perceptual experience.

Although the assertion that mental images are processed Prima Facie by associative memory may initially appear implausible, it is actually in line with and complements the most widely accepted model of mental imagery (Kosslyn 1994). In the following section, I outline a feasible explanation for how visual imagery could become dissociated from source information, resulting in the observed effects. To illustrate this, I will draw upon Kosslyn's model of imagery (Kosslyn 1980, 1994, 2005; Farah 1984), a theoretical framework in which both internally generated visual imagery and externally generated percepts are projected onto a single visual buffer for inspection.

By drawing on Kosslyn's model as a foundation, we can gain a better understanding of how associative memory might play a pivotal role in the reviewed effects by processing visual imagery Prima Facie, even when the idea appears far-fetched at first glance.

4.2.2 Visual Imagery: On the Link Between the Visual Buffer and Associative Memory

Neuroimaging research has demonstrated that mental imagery relies on many of the same neural substrates as perception within the same modality (Dijkstra et al. 2019; Kosslyn, Ganes & Thompson 2001). When we visualize or imagine something, we activate similar areas of the brain as we do when actually perceiving the same stimulus (Pearson 2019). In particular, studies have shown that visual imagery activates primary visual areas, specifically areas 17 and 18 (Kosslyn 2005). These areas are significant because they constitute the initial cortical regions that receive input from the eyes (Kosslyn & Thompson 2003; Pearson et al. 2015; Sparing et al. 2002).

Kosslyn's imagery model is grounded in the idea that mental imagery and perception share similar underlying neural mechanisms (Kosslyn 1980, 1994, 2001). This model suggests that both bottom-up visual perception and top-down visual imagery are projected down the same visual pathways, converging on a single visual buffer that is utilized for object recognition.¹² Kosslyn and Shin describe this process by stating, "It is as if the Visual Buffer is a kind of screen, which can display input from a camera (perception) or videotape (imagery)" (Kosslyn & Shin 1991: 529-530). The Visual Buffer is the medium through which images occur: both internally generated images and visually encoded percepts are projected onto it.¹³

According to Kosslyn's theory, images are not stored in long-term memory, which only contains implicit information about objects' shapes and properties (Kosslyn 2005: 337). The purpose of projecting imagery into the Visual Buffer is to make explicit information stored implicitly in memory. For instance, when asked "What shape are a beagle's ears?", long-term memories are activated and the image of a beagle is projected into the buffer, allowing us to "look" at it while answering the question (Kosslyn 1987: 149).

To serve this function, mental images, once projected onto the Visual Buffer, undergo inspection in the same manner as percepts (Kosslyn & Shin 1991: 530). More precisely, the model posits that object identification within the Buffer entails a comparison process with associative memories, which contain information about object shapes and components:

¹² Kosslyn (1994) suggests the primary visual area as the most probable neural foundation for the visual buffer.

¹³ Kosslyn's visual buffer is synonymous with the concept of an "active blackboard," a metaphor employed by neuroscientists to characterize early vision (Bullier 2001, 2004). According to it, the early visual cortex functions like a blackboard, in which both bottom-up retinal sensory stimulation and top-down generated mental imagery can "draw" (Nanay 2021).

“Once the object is recognized, a pattern code is sent to associative memory, where it activates the appropriate representations and the object is identified” (Kosslyn 1994: 145). Upon encountering a congruence between the newly projected information in the buffer and a pre-existing memory pattern, the object can be successfully identified.

The link proposed by Kosslyn between the Visual Buffer and associative memory provides a compelling rationale for the similar treatment of percepts and visual imagery within the later. The primary objective of inputting images projected in the Buffer into associative memory is the quick identification of the objects displayed in the Visual Buffer. Consequently, associative memory may prioritize processing shapes and patterns of images projected in the Buffer—which serve to identify them—while disregarding information about their originating sources. This leads to a default treatment of projections in the Visual Buffer as percepts, or in other words, to processing them *Prima Facie*.

4.2.3 Implicit Assertoric Force

The *Prima Facie* View neither denies nor precludes the existence of more sophisticated metacognitive systems incorporating source information when processing imaginative experiences (Dijkstra, Kok, & Fleming 2022). Parallel monitoring mechanisms might be responsible for the phenomenally non-assertoric force of imaginings, as well as for the ability of individuals to consciously introspect the source of their imaginings.

In the proposed view, imagination does not have assertoric force as perception does: when imagining, we are not inclined to believe the content of our imaginings as we do in perception. Instead, the *Prima Facie* processing of mental images endows imagination with implicit assertoric force; it triggers and influences associative memories in a manner akin to perceptual experiences. Because associative memory disregards information about the source of the images projected in the Visual Buffer, associative responses similar to those triggered by percepts will be elicited during imagining (e.g., emotions), and associations between the constituents of our imaginings may be created, extinguished, or reinforced. The fact that associative memory processes both percepts and imagery without tagging does not mean that

perception and imagination will elicit the exact same response. Shared dimensions between percepts and imagery, such as vividness, might modulate these responses.¹⁴

The architecture proposed implies that perceived *images*, including those from virtual reality or movie projections, are processed Prima Facie. These percepts are projected onto the Visual Buffer and fed into associative memory without nuances concerning their source, such as the fact that they stem from a screen. As a result, associative memory reacts to these perceived images as if they were perceptions of real entities rather than simply perceived representations. Does this align with empirical evidence? Indeed, it does. This mechanism explains the success of Virtual Reality exposure therapy in the treatment of phobias. Furthermore, it accounts for the powerful emotional reactions evoked, for instance, when watching a horror movie.

The Prima Facie processing of images projected in the Visual Buffer also provides an explanation for several of Rozin's and Nemeroff examples in *The Laws of sympathetic magic* (1990) which can be seen as Prima Facie effects. Why are people less accurate when throwing darts at a picture of a beloved one and reluctant to consume a well-crafted mound of chocolate fudge shaped to appear like dog feces (Rozin, Millman, Nemeroff 1986)? The *prima facie* processing of these perceptual experiences, in which nuances on the fact that we are just perceiving a picture of a beloved one or an apparent fudge are disregarded, explains and predicts these effects.

At this point, we should note that the Prima Facie View is compatible with the affective system receiving information on the source of imaginings, hereby moderating its associative Prima Facie response. Differences in the degree of emotions elicited by imaginings and real experiences may be accounted for by parallel processing that integrates information about the source of the representation. This integration could downregulate prima facie reactions. For instance, immersing in a horror movie usually causes emotional reactions that are later

¹⁴ It is beyond the scope of this paper to delimit the full spectrum of operations that potentially process the contents of perceptual imagination *prima facie*, such as those responsible for physiological responses that are in place when imagining (e.g., systolic blood pressure—Kappes and Oettingen 2011—, or skin conductance—Mueller, Sperl, Panitz 2019). By now, the evidence reviewed provides reasons to claim that associative memory processes visual imagery *prima facie*.

mitigated by paying attention to the source of the representation (i.e., “It is just a movie!”), thereby moderating a prima facie response.

5. Explaining the Observed Phenomena: A Comprehensive Analysis

The architectural tenets of the Prima Facie View explain and predict the psychological phenomena reviewed. In sum, the architecture of imagination here proposed, in which visual imagery is processed as percepts in operations involving associative memory, is a parsimonious, unificatory and plausible candidate for explaining both the immediate and enduring effects of imagination.

5.1 Imaginal Exposure and Phobias

The Prima Facie processing of mental imagery by associative memory explains why the mental image of a dog triggers a fear response in a phobic individual, similar to their response when actually seeing a dog. Since both real and imagined dogs share a similar appearance, and associative memory prioritizes visual cues over the information's origin, the associations triggered by a real dog are also triggered when perceptually imagining an interaction with a dog.

In the proposed account, imagining an interaction with a dog triggers fear in those with cynophobia because the mental image of the dog (treated as a percept) has a direct associative link to fear. An alternative, inferential explanation is the following. If the imaginative state is treated as a perception, a subpersonal consuming process may come to represent that there is in fact a dog in front of one. If the person also *believes* that dogs are dangerous, the process will infer that fear is the appropriate response. This inferential explanation requires that individuals with dog phobia *believe* dogs are dangerous. However, beyond responses in the presence of the stimulus, the behavior and attitudes of those with phobias do not align with the habitual functional profile of belief. These individuals often recognize that their fears are irrational and do not endorse that dogs pose a significant threat. Interestingly, they're generally unconcerned about their loved ones being near dogs. Also, presenting logical arguments or counterevidence does not seem to modify their phobias. Therefore, those arguing for the inferential explanation need to delve deeper into the unique nature of beliefs

linked to phobias and provide reasons to favor the inferential explanation over an associative one.

In contrast to the inferential explanation, a fundamentally associative explanation does not posit that phobic individuals believe the feared stimulus is actually dangerous. Furthermore, it straightforwardly explains why emotions and behaviors are triggered mainly by the presence of the stimulus or its perceptual representation. Additionally, the fact that exposure therapy, the primary treatment for phobias, operates on associative principles provides strong support for an associative account.¹⁵

Regarding the enduring effects of imaginal exposure, since the associative system treats a top-down image and a percept of a dog similarly, we do not have distinct associations for imagined dogs versus real dogs. Specifically, we don't have one set of associations for *imagined* dogs and a different one for *perceived* dogs. Hence, associations formed or altered during imagined interactions with dogs are automatically generalized to their real-life counterparts, and vice versa.

5.2 Fantasies of Self-Achievement

Regarding the impact of self-achievement fantasies on motivation and effort, two mechanisms might mediate the phenomenon. The first mechanism appeals to the *immediate* effects of such fantasies. It might be that, à la Nozick, participants desire the experience itself (feeling successful) and not what it represents (being successful).¹⁶ In this case, perceptual-like imaginings could act as a weak substitute for the actual experience, diminishing the drive to obtain genuine achievements. Should this be the case, we need to explain why perceptual-like imaginings elicit emotional responses similar to those from actual perceptual experiences, thereby functioning as weak substitutes for the experiences themselves (Kappes & Morewedge 2016). That is, why does Fred become momentarily happy by immersing himself in the imagining of winning a prize if he knows that nothing of this sort is happening?

¹⁵ I thank an anonymous reviewer for suggesting this alternative, inferential explanation. Given space limitations, a thorough examination of alternative perspectives (e.g., an inferential account within a fragmented belief system, Bayesian, etc.) is not feasible. My aim is to highlight that the associative approach offers a concise and noteworthy explanation for the effects of perceptual imagination, making it a compelling candidate for explaining the phenomena.

¹⁶ I owe this suggestion to an anonymous reviewer, to whom I am very thankful.

The Prima Facie View is well-equipped to explain why imaginings can function as emotional substitutes. According to the View, subpersonal processes treat imaginative states as if they were originating in perception. When reading images projected in the Visual Buffer, the associative system disregards the fact that the event is not actually happening but is instead being internally generated. As a result, feelings akin to those from genuine successes, albeit weaker, are associatively triggered by the imagining, enabling individuals to savor positive emotions without actual effort. Access to these surrogates, in turn, might dampen our enthusiasm to exert effort toward goals, explaining the waning motivation observed in empirical research.

Furthermore, empirical evidence involves factors such as weight loss in obese people and grades in academic programs. Given the personal relevance of these outcomes, subjects may want not only the “experience” (of which imagination provides a weak emotional substitute) but also what it represents (the desired outcome to be the case). By appealing to the enduring associative effects of fantasies of self-achievement, we can formulate an account that accommodates this possibility. When an event is repeatedly imagined, the implicit assertoric force of perceptual imagination predicts that associations between elements comprising the imagined event will be strengthened (similarly to how they would be if the event were perceived). Consequently, these fortified associations—which are enduring, as they persist longer than the imagining itself—will enhance the fluency of future imaginings of the event. In turn, enhanced fluency may impact heuristic judgments on how easy it is to achieve the depicted outcomes. That is, the easier the imagining is evoked, the easier we perceive the attainment of the represented outcome.

This proposal aligns with the Simulation Heuristic, which posits that “the ease with which the simulation of a system reaches a particular state is eventually used to judge the propensity of the real system to produce that state” (Kahneman & Tversky 1981: 2). In our context, after repeatedly imagining success, we will be able to effortlessly invoke the visualization of our success. Guided by the Simulation Heuristic, we could inadvertently extrapolate the ease of envisioning the outcome with the ease of achieving it.¹⁷

¹⁷ The Simulation Heuristic was originally formulated to explain the perceived plausibility of counterfactual events. I suggest it may also be at work when assessing the likelihood of future events. Ease of processing can influence many judgments: The interpretation of a fluency cue varies based on its established validity (Unkelbach 2006).

Thus, in the same way we feel competent to achieve what we have easily achieved in the past (real experiences), we end up feeling competent to achieve what we have easily imagined in the past (imagined experiences). Consequently, developing the impression that the desired outcome is readily attainable might 1) undermine our motivation and invested effort by diminishing the challenge—as outcomes that are deemed easy to achieve lose their motivational allure and are perceived as requiring less effort—and 2) hinder achievement by hampering planning, as proposed by Kappes and Morewedge (2016).

5.3 Imaginal Contact

The effects of imaginal contact can be explained by appealing to 1) the *Prima Facie* Processing of visual imagery and 2) evaluative conditioning. Evaluative conditioning refers to attitude formation or change toward a stimulus due to that stimulus's mere co-occurrence with another valenced stimulus. In the case of imaginal contact, by imagining a positive interaction with an outgroup member, the valence associated with the outgroup shifts positively, reducing intergroup bias in a manner similar to direct face-to-face contact. Due to the source-indifference of associative memory, the valence of mental imagery of outgroup members is automatically generalized to actual outgroup members.

Empirical research on evaluative conditioning and mental imagery supports this interpretation. Lewis et al. (2013) show that voluntary mental images become conditioned when followed by emotion-evoking stimuli (pictures with positive valence). Crucially, the conditioning generalizes from the mental image to the real stimulus. After conditioning a mental image, perceptual stimuli with the same appearance produce the associated emotional response. In a similar vein, merely imagining an event can shape attitudes toward elements (i.e., places) from our real-life environment. In Benoit et al. (2009), participants were instructed to imagine people they either liked or disliked in a neutral setting, such as a living room. Through this act of imagination alone, the neutral place took on the valence of the person imagined within it. This mirrors the effects of experiencing a negative event in a neutral setting. For example, enduring a traumatic event in a previously neutral location (like a breakup in a city park) can lead the place to take on the negative emotions linked to the event. The *Prima Facie* processing of visual imagery elucidates why these imaginal exercises modify pre-existing associations.

5.4 Imagination and Probability Judgments, Intentions and Behavior

Regarding the influence of imaginings in probability estimates, the main question is: by which mechanism do imagining events at t_1 —as perceiving them—affect ease in processing similar events at t_2 , subsequently influencing our subjective estimation of these later events probability? The Prima Facie View explains it as a consequence of the implicit assertoric force of imaginings.

Because imaginings are processed Prima Facie by associative memory (i.e., as is they were originated in perception), we do not have one set of associations for elements involved in imagined events and another set for elements involved in real events. Both perceiving and imagining event X at t_1 will strengthen the associations between elements involved, thereby increasing the ease with which we imagine similar episodes at t_2 . That is, if I have a connection between A and B based on experience, merely imagining further events involving A and B will strengthen that connection. Of course, differences in vividness and other variables can modulate the degree to which connections are strengthened when perceiving or imagining, but the takeaway is that the connections will be strengthened in both cases. The strength of these associations, in turn, will impact the ease of processing of future imaginings of similar events, which will influence, in the absence of defeaters, metacognitive judgments on the probability of events.¹⁸

Lastly, imagining performing an action can influence our intentions and behavior by altering our attitude towards the imagined action through evaluative conditioning. If imagining an activity is enjoyable, we may anticipate wanting to undertake it in the future, given the positive emotions associated with the action in imagination. Further, given the overlap between imagination and perception in associative memory, both performing and imagining an action at one time (t_1) can enhance the ease with which we imagine similar actions at a later time (t_2). Ease of imagining at this later time (t_2) can inform judgments about people's behavioral intentions in specific settings (Anderson 1983).

¹⁸ The Prima Facie View posits that the ease of processing is influenced by the strength of associative connections between the elements in an imagined scenario. This link is supported by literature on cognitive fluency (Topoliski & Strack 2009) and associations in intuitive judgments (Morewedge & Kahneman 2010). Additionally, features related to processing ease, such as response facilitation, are interpreted as a measure of the strength of association between an object and an evaluation in tools such as the Implicit Association Test (Dasgupta & Greenwald 2001).

6. Alternative Explanations

It is crucial to acknowledge that some accounts have underscored the consequences of imagination, moving beyond the Innocent View. These accounts aim to elucidate the functional similarities between imagination and belief (Gendler 2010; Nichols 2004, Mandelbaum 2014). In this section, I examine the Spinozian Model of Belief Formation and Gendler's notion of *alief* as alternative explanations for the empirical evidence under consideration. Ultimately, I argue that the Prima Facie View offers a more parsimonious and comprehensive account of the relevant findings, outperforming these alternatives.

6.1 Spinozian Model of Belief Formation

According to the Spinozian Model of Belief Formation (henceforth SBF), the mere activation of a truth-apt proposition results in its immediate acceptance (Gilbert 1991; Mandelbaum 2014). In this model, propositions are by default processed as true prior to comprehension, which helps explain findings showing that entertaining a proposition often results in evaluating it as true in subsequent stages. In Mandelbaum's words: "People do not have the ability to contemplate propositions that arise in the mind, whether through perception or imagination, before believing them. Because of our mental architecture, it is (nomologically) impossible for one to not immediately believe propositions that one tokens" (Mandelbaum 2014: 61).

Mental imagery has no role in SBF; the model concerns propositions. Nevertheless, a Spinozian could argue that propositions are part of perceptual imaginings, as they shape the non-visual aspects of what is represented. According to this perspective, when imagining, subjects entertain—and thus, temporarily believe—the proposition whose content is represented by visual imagery. For example, when a person with dog phobia envisions a positive interaction with a dog, they might be entertaining the proposition "This dog is harmless" or "Dogs are harmless." This would constitute a non-imagistic, propositional account of the evidence reviewed, implying that mental imagery would not play a role in explaining the consequences of imagination.

However, there is a crucial obstacle in reducing the effects of experiential imagination to a Spinozian model of belief. Evidence indicates that the quasi-sensory character of imagination plays a crucial role in its behavioral and attitudinal impact. For instance, patients with phobias do not improve by merely entertaining propositional information discursively. Indeed, this approach is the initial step in treatment: ensuring that patients are aware of the irrationality of the phobia and that they acknowledge that the fear-inducing stimulus is not highly dangerous. In other words, patients have already entertained the proposition that dogs are harmless on numerous occasions. They have read it and heard it countless times from their relatives in response to their avoidance behaviors. Nevertheless, this has not been sufficient either to change their behavior or the emotions elicited by the phobic stimulus. The experiential quality (via visual mental imagery) of imaginal exposure is crucial in therapy.¹⁹

Furthermore, a propositional account struggles to account for the observed modulation of effects based on the level of detail and vividness of visual imagery. For example, the Imagined Contact effect is amplified by the level of detail of the imagining and the reduction of concurrent sensory input. In Husnu and Crisp (2011), participants who generated more detail in their simulated encounter with an outgroup member anticipated having a larger number of outgroup acquaintances in the future. Similarly, participants who closed their eyes while visualizing an encounter exhibited greater intentions to engage with outgroup members in the future.

Lastly, a doxastic account faces challenges in providing an explanation in propositional terms for Rozin and Nemeroff 's cases (as discussed in section 4.2.3) and other imagery-related effects. For example, when someone is asked to vividly imagine for a specific duration, "a person who looks identical to their partner kissing someone else," it is likely to elicit negative emotions. How does the Spinozian account tackle this situation? The proposition under consideration appears harmless: one wouldn't be concerned about a mere doppelganger of their partner kissing another person. The Prima Facie View can explain the negative feelings that emerge from envisioning this scenario. Because the associative system

¹⁹ The following clinical notes by Dadds et al. about a claustrophobic patient underscore the limitations of a purely propositional approach: "His irrational fear remained that the world could come to an end when he was trapped in an elevator, and he would thus die, trapped there alone. *Attempts to deal with this fear with rational countering (i.e., propositional cognition) were doomed to failure* because it had to be conceded that, despite it being incredibly unlikely to happen, yes, the world could end with him trapped in an elevator. Adoption of a representational approach alerts the clinician to *deal with the image itself*, to attack its power to distress the person." (Dadds et al. 1997: 101, emphasis mine).

places greater emphasis on the appearances of the images projected in the Visual Buffer and disregards the subtleties of information sources, the doppelganger's scene inevitably evokes relevant associations.

The Prima Facie View explains the effects of experiential imagination by appealing to associative memory, which helps us distinguish between the direct doxastic consequences of imagination (e.g., when reality monitoring errors occur) and the subtler, yet more pervasive default influences of imagination. This allows it to cover several cases that are not explained by a Spinozian account of the reviewed effects.

6.2 Gendler's Notion of Alief

The cases examined in this paper share similarities with examples presented by Tamar Gendler (2010) regarding the phenomenon of Imaginative Contagion. This phenomenon pertains to instances where imagining or pretending P produces effects that one might anticipate from believing or perceiving P.

One example provided by Gendler concerns the Bystander Apathy Effect. This effect highlights our tendency to help faster someone in distress when we believe we are the sole observer, as opposed to situations where we think other bystanders are present. Gendler echoes evidence showing that this effect also takes place if we merely imagine being in a group (Garcia et al. 2002: 845). In giving an account of these effects, Gendler mentions the source-indifference of some operations in processing imaginings and takes Imaginative Contagion to be an instance of the mental state of *alief* (Gendler 2010: 275). While imagining being in a group, we alief being in a group. Gendler defines alief in the following way (Gendler 2010: 255):

“...an *alief* is a mental state with associatively linked content that is representational, affective, and behavioral, and that is activated—consciously or unconsciously—by features of the subject's internal or ambient environment. It is a more primitive state than either belief or imagination: it directly activates behavioral response patterns (as opposed to motivating in conjunction with desire or pretended desire).”

Gendler uses alief to cover a variety of cases that resemble many of the ones here reviewed. For example, stepping onto a safe transparent surface at a height can induce feelings of vertigo. In this scenario, she claims that although the adventurer *believes* that the walkway is completely safe, she *alieves* something different. The alief, in this case, has the following content: “Really high up, long, long way down. Not a safe place to be! Get off!!” (Gendler 2010: 256).

A detailed critique of Gendler's alief concept is beyond the scope of this paper²⁰. My aim will be mainly to show that there are two compelling reasons to favor the Prima Facie View over Gendler's account.

First, while the concept of alief adequately explains the immediate effects of imagination—those that occur during or immediately after imagining—it falls short in comprehensively capturing imagination's long-term impacts, such as shifts in behavioral tendencies and emotional valences. Gendler emphasizes that aliefs are typically hard-wired and difficult to modify (Gendler 2010: 300). Though she allows for a degree of malleability of aliefs through habit or imagination, the theory is silent about the mechanism underlying alief change. Specifically, through which mechanism are aliefs altered by habit or imagination? This crucial question goes unanswered in her perspective. Consequently, the notion of alief alone does not provide a satisfactory explanation for the enduring emotional, behavioral, and attitudinal changes resulting from perceptual imaginings. This omission leaves unexplained the influence of imaginings on event probability estimates and the lasting behavioral changes following imaginal exposure in phobia patients. In contrast, the Prima Facie View explains both the immediate effects of perceptual imagination—i.e., emotional associative responses during imagination—and the enduring effects—i.e., associations formed, reinforced, or broken post-imagination, that generalize to real-world counterparts.

Second, introducing a new mental state, such as alief, undermines the parsimony of Gendler's perspective when compared to the Prima Facie View, especially given Gendler's reliance on association in defining aliefs. In response, Gendler might resist the argument from parsimony and deny the need to invoke associations in her framework. Indeed, she asserts that aliefs are fundamental and not simply an amalgam of three distinct primitive mental states: content R, affective state A, and behavioral repertoire B. As she puts it, “the

²⁰ For a critique of Gendler's *alief*, see: Mandelbaum 2013.

fact that our current vocabulary requires us to describe alief-content using three separate terms doesn't show that the state is an amalgam of the others" (Gendler 2010: 264). Yet, understanding how alief might change becomes challenging without invoking associations. If alief can undergo changes, the formation and alteration of associative links— between content R, affect A and behavioral responses B—appear crucial.

Lastly, the Prima Facie View adeptly addresses cases discussed by Gendler, including the example of a person shaking when stepping onto a transparent surface and the cases presented by Paul Rozin. Under the Prima Facie View, perception in these instances elicits associated emotional responses given associative memory neglects nuances regarding the simulational nature of the source of experience.

7. Objections to the Prima Facie View

7.1 Functional Concerns

At this point, one might question the evolutionary value of the Prima Facie processing of visual imagery. However, it is worth noting that despite the potential maladaptive side-effects, the advantages of a direct link between perceptual imagination and associative memory are noteworthy.

Firstly, associations elicited by imagination could prove beneficial in the realm of affective forecasting (Gilbert, Gill & Wilson 2002). When envisioning a future event, the Prima Facie processing of visual imagery can associatively trigger emotions similar to those that would be elicited during actual experience. This emotional response can facilitate 1) the forecast of how we will feel in that particular situation, and 2) decision-making based on our imaginative projections of future events (Nanay 2016). For an anticipated event to have a significant influence on us, it must be processed, to some extent, as factive or occurrent. The Prima Facie processing of mental images would serve this function.

Additionally, the connection between imagination and associations may facilitate rapid, adaptive responses to ambiguous external stimuli. When a hiker hears an unusual noise and envisions a snow avalanche, visual imagery of large chunks of snow may trigger helpful responses through associative processes. According to the Prima Facie View, this occurs

automatically, allowing the hiker to react promptly and adopt suitable measures, such as veering to the right while skiing. If visual imagery accurately predicts an avalanche, it could save the hiker's life.

Furthermore, the fact that imagination leads to the creation and reinforcement of associations may offer two notable benefits. First, it enables conditioning through experiential imagination of content acquired via testimony. For example, if someone recounts being bitten by a neighbor's dog, one can conjure a vivid mental image of the event. Through this exercise and due to the Prima Facie processing of mental imagery, the dog will acquire negative valence. This change can be advantageous and promote adaptive behavior. As the dog has taken on a negative valence through imagination, negative emotions will be triggered upon seeing it, facilitating a swift flight response. Secondly, the Prima Facie processing of mental imagery can generate associations when engaging in regretful counterfactual imaginings about what we could have done in the past, making these associations available for future use. Consider Sally, who regrets not having requested a salary increase during her last meeting with her boss due to anxiety. By repeatedly visualizing how she might have approached the situation differently, associations between the boss's potential responses and her potential reactions in that emotional state will be formed. By reinforcing these associations, she will be better prepared to reply if a similar situation arises. This aligns with the following observation by Bar: “We simulate, plan and combine past and future *in our thoughts*, and the result might be ‘written’ in memory for future use.” (Bar 2007: 286, emphasis mine)

Lastly, the triggering of emotions during imagination can also be adaptive in the following manner: In challenging situations, such as the one Fred faced as described in the paper's introduction, imagination aids in tempering frustration and anger. By envisioning a desired outcome, one can evoke more positive emotions than those elicited by the actual, concurrent situation (Kappes, Schwörer & Oettingen 2012).

7.2 Absence of Everyday Effects

Reluctance to embrace the Prima Facie View might stem from a perceived lack of everyday evidence for the phenomena discussed. Such skepticism might be articulated as: if imagination had this architectural profile, its effects in daily life would be more conspicuous.

Skeptics might regard the evidence in this paper as isolated, stemming only from decontextualized laboratory or clinical cases. Relying on intuition, as the skeptic might, I delve into everyday occurrences that mirror the phenomena reviewed, and which are explained and predicted by the Prima Facie View.

A closer look reveals plenty of Prima Facie effects in everyday life. Martha Stewart recently shared in an interview that she had to end her relationship with Anthony Hopkins after he starred in the thriller *The Silence of the Lambs*²¹. Stewart explained, “I have a big, scary house in Maine that’s way by itself on a hundred acres in the forest, and I couldn’t even imagine taking Anthony there. I couldn’t—all I could think of was him eating, you know...”—referencing Hannibal Lecter’s culinary habits. Although Stewart knew Hopkins was just acting, his face became linked to the movie’s horrors and the resulting fear. A deliberate judgment by Stewart would likely deem Hopkins non-threatening—as conscious reflection provides no evidence to the contrary. However, viewing the movie changed her affective responses. As predicted by the Prima Facie View, associations between Lecter’s face and the film’s brutalities were formed and inevitably extrapolated to the real-life Hopkins. In Stewart’s case, these affective responses took precedence in guiding her behavior, including her choice to forgo the trip to Maine with him.

Regarding the impact of self-fulfilling fantasies, on numerous occasions we meet people with very high confidence in being able to achieve a goal, despite having done nothing of the sort in the past. This prompts the question: Where does their confidence originate? A plausible answer is that they have repeatedly imagined themselves succeeding at the task, increasing the ease and fluency of the imagining. Consequently, the actual ease in envisioning their success is extrapolated to the ease of achieving it. Through this process, fantasies about oneself can affect one’s self-concept. The writer Steinbeck points to this phenomenon when stating, “Socialism never took root in America because the poor see themselves not as exploited proletariat, but as temporarily embarrassed millionaires.”²² If we repeatedly imagine ourselves within an idealized future (as Fred does in Walton’s example at the beginning of the paper), our self-concept may become based on our imagined self. This could explain why we sometimes act in favor and defend the interests of our imagined, potential self, rather than the interests of our actual self: we identify with our imagined future self.

²¹ “Ellen DeGeneres” show (20/1/2022).

²² As quoted by Ronald Wright in *A Short History of Progress* (2005:124)

Revisiting the example at the beginning of this paper, Fred's acknowledgement that his wealth is merely a fantasy does not guarantee that his daydreaming is inconsequential. Repeatedly engaging in such imagining might influence his perceived likelihood of a sudden life transformation, the effort required for this change to occur, and his self-concept. This, in turn, could influence his behavior by, for instance, preventing him from unionizing.

Acknowledging the nuanced influence imagination exerts on our attitudes and behavior, even when accurately discerning between imaginative constructs and reality, is essential in order to address and mitigate some of the negative epistemic consequences discussed in this paper. In the same way being exposed to information we know to be false can influence our beliefs (Fazio 2020), self-generated imaginings can also have epistemic implications. Contrary to romanticized views on the virtues of imagination, the evidence reviewed in this paper suggests that, from a strictly epistemic point of view, it is wise to be moderate, if not cautious, in indulging in imagination.

8. Conclusions

Empirical evidence shows that perceptual imagination has attitudinal and behavioral effects similar to those of perceptual experiences, even in the absence of reality monitoring errors. Although imagination does not directly lead to belief formation like perception does, its subtle influence on attitudes and behavior merits further investigation. The Prima Facie View constitutes an initial attempt to explain these effects. According to this view, visual imagery is treated as percepts in operations involving associative memory (i.e., it is processed Prima Facie). As a result, perceptual imaginings have implicit assertoric force: they trigger and interfere with associations originating from perceptual experiences. This subsequently impacts our emotions, behavior, and attitudes toward the real-life counterparts of the imagery. Further investigation will shed light on the mechanisms underpinning the effects of imagination, with the potential to enhance the efficacy of various clinical interventions, including imagery techniques, benefiting patients across a broad spectrum of conditions.

Acknowledgements: This paper has significantly benefited from the comments and feedback of numerous people. Special thanks to Manolo García-Carpintero, Bence Nanay, Marc-Lluís Vives, Eric Mandelbaum, Steven Sloman, Peter Langland-Hassan, Stephen

Gadsby, Andrea Blomkvist, William Hornett, Ben Henke, Sam Clarke, David Barack, Jordi Fernández, Nikola Andonovski, Kourken Michaelian, and two anonymous reviewers. Thanks to members of the LOGOS Seminar (University of Barcelona), the Centre for Philosophical Psychology (University of Antwerp), Sloman's Lab (Brown University), the Centre for Philosophy of Memory (Université of Grenoble-Alpes), and Thumos (University of Geneva). Thanks also for feedback to audiences at the Issues in Philosophy of Memory III Conference, the 3rd joint conference of the SPP and the ESPP, and The Science and Philosophy of Imagination Conference (University of Bristol). This work was supported by a grant from the Spanish Government (BES-2017-082991) in the framework of the projects "The Significance of First-Personal Attitudes" (FFI2016-80588-R) and "The Philosophy of Hybrid Representations" (PID2020-119588GB-I00), and a postdoctoral scholarship at the Centre for Philosophical Psychology (University of Antwerp) and the Swiss Center for Affective Sciences (University of Geneva) in the context of the project "Emotion and Mental Imagery".

References

Allport, Gordon W. (1954). *The Nature of Prejudice*. Perseus Books.

Anderson, Craig A. (1983). Imagination and Expectation: The Effect of Imagining Behavioral Scripts on Personal Influences. *Journal of Personality and Social Psychology*, 45(2), 293-305.

Angie, Amanda D., Shane Connelly, Ethan P. Waples, and Vykinta Kligyte (2011). The Influence of Discrete Emotions on Judgement and Decision-making: A Meta-analytic Review. *Cognition & Emotion*, 25(8), 1393-1422.

Antony, Martin M., and Richard P. Swinson (2000). Specific Phobia. In Martin M. Antony and Richard P. Swinson (Eds.), *Phobic Disorders and Panic in Adults: A Guide to Assessment and Treatment* (79–104). American Psychological Association.

Asbrock, Frank, Lisa Gutenbrunner, and Ulrich Wagner (2013). Unwilling, But Not Unaffected—Imagined Contact Effects for Authoritarians and Social Dominators. *European Journal of Social Psychology*, 43(5), 404-412.

- Badura, Christopher, and Amy Kind (Eds.) (2021). *Epistemic Uses of Imagination*. Routledge.
- Bar, Moshe (2007). The Proactive Brain: Using Analogies and Associations to Generate Predictions. *Trends in Cognitive Sciences*, 11(7), 280-289.
- Bem, Daryl. J. (1972). Self-perception Theory. In Leonard Berkowitz (Ed.), *Advances in Experimental Social Psychology*, Vol. 6 (1-62). Academic Press.
- Benoit, Roland G., Philipp C. Paulus, and Daniel L. Schacter (2019). Forming Attitudes Via Neural Activity Supporting Affective Episodic Simulations. *Nature Communications*, 10(1), 1-11.
- Blackwell, Simon E. (2023). Mental Imagery and Interpretational Processing Biases. In Marcella L. Woud (Ed.), *Interpretational Processing Biases in Emotional Psychopathology: From Experimental Investigation to Clinical Practice* (97-116). Springer International Publishing.
- Botella, Cristina, Javier Fernández-Álvarez, Verónica Guillén, Azucena García-Palacios, and Rosa Baños (2017). Recent Progress in Virtual Reality Exposure Therapy for Phobias: A Systematic Review. *Current Psychiatry Reports*, 19(7), 1-13.
- Bullier, Jean (2001). Integrated Model of Visual Processing. *Brain Research Reviews*, 36, 96-107.
- Bullier, Jean (2004). Communications Between Cortical Areas of the Visual System. In Leo M. Chalupa and John S. Werner (Eds.), *The Visual Neurosciences* (522-540). MIT Press.
- Cameron, Lindsey, Adam Rutland, Rihannon N. Turner, Rosie Holman-Nicolas, and Claire Powell (2011). Changing Attitudes With a Little Imagination?: Imagined Contact Effects on Young Children's Intergroup Bias. *Anales de Psicología*, 27(3), 708-717.
- Carroll, John S. (1978). The Effect of Imagining an Event on Expectations for the Event: An Interpretation in Terms of the Availability Heuristic. *Journal of Experimental Social Psychology*, 14(1), 88-96.

Chasid, Alon, and Assaf Weksler (2020). Belief-like Imaginings and Perceptual (non-) Assertoricity. *Philosophical Psychology*, 33(5), 731-751.

Choy, Yujuan., Abby. J. Fyer, and Josh D. Lipsitz (2007). Treatment of Specific Phobia in Adults. *Clinical Psychology Review*, 27, 266–86.

Crisp, Richard J., and Rhiannon N. Turner (2009). Can Imagined Interactions Produce Positive Perceptions?: Reducing Prejudice Through Simulated Social Contact. *American Psychologist*, 64(4), 231-240.

Dadds, Mark R., Dana H. Bovbjerg, William H. Redd, and Tim R. Cutmore (1997). Imagery in Human Classical Conditioning. *Psychological Bulletin*, 122(1), 89-103.

Dasgupta, Nilanjana, and Anthony G. Greenwald (2001). On the Malleability of Automatic Attitudes: Combating Automatic Prejudice with Images of Admired and Disliked Individuals. *Journal of Personality and Social Psychology*, 81(5), 800-814.

Dijkstra, Nadine, Sander E. Bosch, and Marcel A. van Gerven (2019). Shared Neural Mechanisms of Visual Perception and Imagery. *Trends in Cognitive Sciences*, 23(5), 423-434.

Dijkstra, Nadine; Peter Kok; Stephen M. Fleming (2022). Perceptual Reality Monitoring: Neural Mechanisms Dissociating Imagination from Reality. *Neuroscience & Biobehavioral Reviews*, 135, 104557.

Dokic, Jérôme, and Margherita Arcangeli (2015). The Heterogeneity of Experiential Imagination. In T. Metzinger & J. M. Windt (Eds.), *Open MIND: 11*. MIND Group.

Eaton, William W., O. Joseph Bienvenu, and Beyon Miloyan (2018). Specific Phobias. *The Lancet Psychiatry*, 5(8), 678-686.

Farah, Martha J. (1984). The Neurological Basis of Mental Imagery: A Componential Analysis. *Cognition*, 18(1-3), 245-272.

Fazio, Lisa. K. (2020). Repetition Increases Perceived Truth Even for Known Falsehoods. *Collabra: Psychology*, 6(1): 38.

Field, Andy P. (2006). Is Conditioning a Useful Framework for Understanding the Development and Treatment of Phobias? *Clinical Psychology Review*, 26(7), 857-875.

Friend, Stacie (2016). Fiction and Emotion. In Amy Kind (Ed.), *The Routledge Handbook of Philosophy of Imagination*, Routledge, 217-229.

Garcia, Stephen M., Kim Weaver, Gordon B. Moskowitz, and John M. Darley (2002). Crowded Minds: the Implicit Bystander Effect. *Journal of Personality and Social Psychology*, 83(4), 843-853.

Garry, Maryanne, Charles G. Manning, Elizabeth F. Loftus, and Steven J. Sherman (1996). Imagination Inflation: Imagining a Childhood Event Inflates Confidence that it Occurred. *Psychonomic Bulletin & Review*, 3(2), 208-214.

Gendler, Tamar S. (2010). *Intuition, Imagination, and Philosophical Methodology*. Oxford University Press.

Gilbert, Daniel T. (1991). How Mental Systems Believe. *American Psychologist*, 46(2), 107-119.

Gilbert, Daniel T., Michael J. Gill, and Timothy D. Wilson (2002). The Future is Now: Temporal Correction in Affective Forecasting. *Organizational Behavior and Human Decision Processes*, 88(1), 430-444.

Goff, Lori M., and Henry L. Roediger (1998). Imagination Inflation for Action Events: Repeated Imaginings Lead To Illusory Recollections. *Memory & Cognition*, 26, 20-33.

Grayson, Jonathan B. (1982). The Elicitation and Habituation of Orienting and Defensive Responses to Phobic Imagery and the Incremental Stimulus Intensity Effect. *Psychophysiology*, 19(1), 104-111.

Gregory, W. Larry, Robert B. Cialdini, and Kathleen M. Carpenter (1982). Self-relevant Scenarios as Mediators of Likelihood Estimates and Compliance: Does imagining make it so? *Journal of Personality and Social Psychology*, 43(1), 89-99.

Gregory, W. Larry, Jeffrey W. Burroughs, and Frances M. Ainslie (1985). Self-relevant Scenarios as an Indirect Means of Attitude Change. *Personality and Social Psychology Bulletin*, 11(4), 435-444.

Hackmann, Ann, James Bennett-Levy, and Emily A. Holmes (2011). *Oxford Guide to Imagery in Cognitive Therapy*. Oxford University Press.

Holmes, Emily A., and Andrew Mathews (2010). Mental Imagery in Emotion and Emotional Disorders. *Clinical Psychology Review*, 30(3), 349-362.

Husnu, Senel, and Richard J. Crisp (2011). Enhancing the Imagined Contact Effect. *The Journal of Social Psychology*, 151(1), 113-116.

Kahneman, Daniel, and Amos Tversky (1981). *The Simulation Heuristic*. Stanford University, Department of Psychology.

Kappes, Heather B., and Gabriele Oettingen (2011). Positive Fantasies about Idealized Futures Sap Energy. *Journal of Experimental Social Psychology*, 47(4), 719–729.

Kappes, Heather B., Gabriele Oettingen, and Doris Mayer (2012). Positive Fantasies Predict Low Academic Achievement in Disadvantaged Students. *European Journal of Social Psychology*, 42(1), 53–64.

Kappes, Heather B., Bettina Schwörer, and Gabriele Oettingen (2012). Needs Instigate Positive Fantasies of Idealized Futures. *European Journal of Social Psychology*, 42, 299–307.

Kappes, Heather B., and Carey K. Morewedge (2016). Mental Simulation as Substitute for Experience. *Social and Personality Psychology Compass*, 10(7), 405-420.

Kind, Amy (2016). Imagining Under Constraints. In Amy Kind and Peter Kund (Eds.), *Knowledge Through Imagination* (145–59). Oxford University Press.

Kocsor, Ferenc, and Tamás Bereczkei (2017). Evaluative Conditioning Leads to Differences in the Social Evaluation of Prototypical Faces. *Personality and Individual Differences*, 104, 215-219.

Kosslyn, Stephen M. (1980). *Image and Mind*. Harvard University Press.

Kosslyn, S. M. (1987). Seeing and Imagining in the Cerebral Hemispheres: a Computational Approach. *Psychological Review*, 94(2), 148-175.

Kosslyn, Stephen M., and Lisa M. Shin (1991). Visual Mental Images in the Brain. *Proceedings of the American Philosophical Society*, 135(4), 524-532.

Kosslyn, Stephen M. (1994). *Image and Brain: The Resolution of the Imagery Debate*. The MIT Press.

Kosslyn, Stephen M., Giorgio Ganis, and William L. Thompson (2001). Neural Foundations of Imagery. *Nature Reviews Neuroscience*, 2(9), 635-642.

Kosslyn, Stephen M., and William L. Thompson (2003). When is Early Visual Cortex Activated During Visual Mental Imagery? *Psychological Bulletin*, 129(5), 723-746.

Kosslyn, Stephen M. (2005). Mental Images and the Brain. *Cognitive Neuropsychology*, 22(3-4), 333-347.

Kruger, Justin, and Thomas Gilovich (2004). Actions, Intentions, and Self-assessment: The Road to Self-enhancement is Paved with Good Intentions. *Personality and Social Psychology Bulletin*, 30(3), 328-339.

Kung, Peter (2010). Imagining as a Guide to Possibility. *Philosophy and Phenomenological Research*, 81(3).

- Langland-Hassan, Peter (2012). Pretense, Imagination, and Belief: The Single Attitude Theory. *Philosophical Studies*, 159(2), 155–179.
- Lewis, David E., Marttthew J. O'Reilly, Sieu Khuu, and Joel Pearson (2013). Conditioning the Mind's Eye: Associative Learning with Voluntary Mental Imagery. *Clinical Psychological Science*, 1(4), 390-400.
- Lewis, Michael (2016). *The Undoing Project: A Friendship That Changed the World*. Penguin UK.
- Loewenstein, George, and Jennifer S. Lerner (2003). The Role of Affect in Decision Making. In Davidson, R. J., Sherer, K. R., & Goldsmith, H. H. (Eds.), *Handbook of Affective Science* (619-642). Oxford University Press.
- Loftus, Elizabeth F. (2003). Make-believe Memories. *American Psychologist*, 58, 867–873.
- Macpherson, Fiona, and Fabian Dorsch (Eds.). (2018). *Perceptual Imagination and Perceptual Memory*. Oxford University Press.
- Mandelbaum, Eric (2013). Against Alief. *Philosophical Studies*, 165(1), 197-211.
- Mandelbaum, Eric (2014). Thinking is Believing. *Inquiry*, 57(1), 55-96.
- Mandelbaum, Eric (2020). Associationist Theories of Thought. In Edward N. Zalta & Uri Nodelman (Eds.), *The Stanford Encyclopedia of Philosophy (Winter 2022 Edition)*.
- Mertens, Gaëtan, Angelos-Miltiadis Krypotos, and Iris M. Engelhard (2020). A Review on Mental Imagery in Fear Conditioning Research 100 Years since the 'Little Albert' Study. *Behaviour Research and Therapy*, 126, 103556.
- Miles, Eleanor, and Richard J. Crisp (2014). A Meta-analytic Test of the Imagined Contact Hypothesis. *Group Processes & Intergroup Relations*, 17(1), 3-26.

Mill, John Stuart (1963). *System of Logic: Ratiocinative and Inductive*. In John M. Robson (Ed.), *Collected Works of John Stuart Mill*. Volume VIII. University of Toronto Press. (Original work published 1843).

Morewedge, Carey K., and Daniel Kahneman (2010). Associative Processes in Intuitive Judgment. *Trends in Cognitive Sciences*, 14(10), 435-440.

Morris, Adam, Brendan B. O'Connor, and Fiery Cushman (2022). The Role of Episodic Simulation in Motivating Commonplace Harms. *Cognition*, 225, 205104.

Mueller, Erik M., Matthias F. J. Sperl, and Christian Panitz (2019). Aversive Imagery Causes De Novo Fear Conditioning. *Psychological Science*, 30(7), 1001-1015.

Myers, Joshua (2021). Reasoning with Imagination. In Christopher Badura and Amy Kind (Eds.), *Epistemic Uses of Imagination* (103-121). Routledge.

Nanay, Bence (2016). The Role of Imagination in Decision-Making. *Mind & Language*, 31(1), 127-143.

Nanay, Bence (2021). Imagining one Experience To Be Another. *Synthese*, 199(5), 13977-13991.

Nichols, Shaun (2004). Imagining and Believing: The Promise of a Single Code. *Journal of Aesthetics and Art Criticism*, 62(2), 129–139.

Nichols, Shaun (2006). Just the Imagination: Why Imagining Doesn't Behave Like Believing. *Mind & Language*, 21(4), 459-474.

Oettingen, Gabriele, and Doris Mayer (2002). The Motivating Function of Thinking about the Future: Expectations versus Fantasies. *Journal of Personality and Social Psychology*, 83(5), 1198-212.

Oettingen, Gabriele, and Thomas A. Wadden (1991). Expectation, Fantasy, and Weight Loss: Is the Impact of Positive Thinking Always Positive? *Cognitive Therapy and Research*, 15(2), 167–175.

Olson, James M., and Jeff Stone (2014). The Influence of Behavior on Attitudes. In Dolores Albarracín, Blair T. Johnson (Eds), *The Handbook of Attitudes* (223-271). Routledge.

Pearson, Joel, Thomas Naselaris, Emily A. Holmes, and Stephen M. Kosslyn (2015). Mental Imagery: Functional Mechanisms and Clinical Applications. *Trends in Cognitive Sciences*, 19(10), 590-602.

Pearson, Joel (2019). The Human Imagination: the Cognitive Neuroscience of Visual Mental Imagery. *Nature Reviews Neuroscience*, 20(10), 624-634.

Pettigrew, Thomas F., and Linda R. Tropp (2006). A Meta-analytic Test of Intergroup Contact Theory. *Journal of Personality and Social Psychology*, 90(5), 751.

Rachman, Stanley (1967). Systematic Desensitization. *Psychological Bulletin*, 67(2), 93.

Reddan, Marianne C., Tor D. Wager, and Daniela Schiller (2018). Attenuating Neural Threat Expression with Imagination. *Neuron*, 100(4), 994-1005.

Rentz, Timothy O., Mark B. Powers, Jasper A. J. Smits, Jesse R. Cogle, and Michael J. Telch (2003). Active-imaginal Exposure: Examination of a New Behavioral Treatment for Cynophobia (Dog Phobia). *Behaviour Research and Therapy*, 41(11), 1337-1353.

Rozin, Paul, Linda Millman, and Carol Nemeroff (1986). Operation of the Laws of Sympathetic Magic in Disgust and Other Domains. *Journal of Personality and Social Psychology*, 50, 703-712.

Rozin, P., & Nemeroff, C. (1990). The Laws of Sympathetic Magic: A Psychological Analysis of Similarity and Contagion. In J. W. Stigler, R. A. Shweder, & G. Herdt (Eds.), *Cultural Psychology: Essays on Comparative Human Development* (205–232). Cambridge University Press.

Sartori, Giuseppe, Sara Agosta, Cristina Zogmaister, Santo D. Ferrara, and Umberto Castiello (2008). How to Accurately Detect Autobiographical Events. *Psychological Science*, 19(8), 772-780.

Schwarz, Norbert (1990). *Feelings as Information: Informational and Motivational Functions of Affective States*. The Guilford Press.

Shepard, Roger N., and Jacqueline Metzler (1971). Mental Rotation of Three-Dimensional Objects. *Science*, 171(3972), 701-703.

Sherman, Steven J., Robert B. Cialdini, Donna F. Schwartzman, and Kim D. Reynolds (1985). Imagining Can Heighten or Lower the Perceived Likelihood of Contracting a Disease: The Mediating Effects of Ease of Imagery. *Personality and Social Psychology Bulletin*, 11, 118-127.

Schellenberg, Susanna (2013). Belief and Desire in Imagination and Immersion. *Journal of Philosophy*, 110(9), 497–517.

Shidlovski, Daniella, Yaacov Schul, and Ruth Mayo (2014). If I Imagine It, then It Happened: The Implicit Truth Value of Imaginary Representations. *Cognition*, 133(3), 517-529.

Sparing, Roland, Felix M. Mottaghy, Giorgio Ganis, William L. Thompson, Rudolf Töpper, Stephen M. Kosslyn, and Alvaro Pascual-Leone (2002). Visual Cortex Excitability Increases During Visual Mental Imagery—a TMS Study in Healthy Human Subjects. *Brain Research*, 938(1-2), 92-97.

Stock, Kathleen (2017). *Only Imagine: Fiction, Interpretation, and Imagination*. Oxford University Press.

Topolinski, Sascha, and Fritz Strack (2009). The Analysis of Intuition: Processing Fluency and Affect in Judgements of Semantic Coherence. *Cognition and Emotion*, 23(8), 1465-1503.

Turner, Rhiannon N., Richard J. Crisp, and Elizabeth Lambert (2007). Imagining Intergroup Contact can Improve Intergroup Attitudes. *Group Processes & Intergroup Relations*, 10(4), 427-441.

Turner, Rhiannon N., and Richard J. Crisp (2010). Imagining Intergroup Contact Reduces Implicit Prejudice. *British Journal of Social Psychology*, 49(1), 129-142.

Tversky, Amos, and Daniel Kahneman (1973). Availability: A Heuristic for Judging Frequency and Probability. *Cognitive Psychology*, 5(2), 207-232.

Unkelbach, Christian (2006). The Learned Interpretation of Cognitive Fluency. *Psychological Science*, 17(4), 339-345.

Walton, Kendall L. (1990). *Mimesis as Make-Believe: On the Foundations of the Representational Arts*. Harvard University Press.

Watson, John B., and Rosalie Rayner (1920). Conditioned Emotional Reactions. *Journal of Experimental Psychology*, 3(1), 1.

Weinberg, Jonathan, and Aaron Meskin (2006). Puzzling Over the Imagination: Philosophical Problems, Architectural Solutions. In Shaun Nichols (Ed.), *The Architecture of the Imagination: New Essays on Pretense, Possibility, and Fiction* (175-202). Oxford University Press.

Williamson, Timothy (2016). Knowing by Imagining. In Amy Kind and Peter Kung (Eds.), *Knowledge Through Imagination* (113–23). Oxford University Press.

Wolitzky-Taylor, Kate B., Jonathan D. Horowitz, Mark B. Powers, and Michael J. Telch (2008). Psychological Approaches in the Treatment of Specific Phobias: a Meta-Analysis. *Clinical Psychology Review*, 28, 1021–37.