

# Nostalgia Increases Financial Risk Taking

**Xi Zou<sup>1</sup>, Margaret Lee<sup>2</sup>, Tim Wildschut<sup>3</sup>,  
and Constantine Sedikides<sup>3</sup>**

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## Abstract

We examined, in five studies, the relation between nostalgia and financial risk taking. We hypothesized that nostalgia increases risk taking by fostering perceptions of social support. In Study 1, we established the basic effect of nostalgia and increased risk taking. In Study 2, we used a measurement-of-mediation approach to specify the underlying mechanism. Perceived support from family members, rather than from significant others or friends, mediated the relation between nostalgia and risk taking. In Studies 3 to 4, we further specified the mediating mechanism (i.e., family social support) and established direction of causality by using an experimental-causal-chain approach. Finally, in Study 5, we provided direct experimental evidence of the full mediation model. Taken together, nostalgia galvanizes perceived family support, which propels individuals toward financial risk.

## Keywords

nostalgia, social support, financial risk taking, emotions, decision making

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Understanding when individuals are willing to assume higher risk has been a long-term goal of psychologists, economists, and, more generally, behavioral scientists (Blais & Weber, 2006; Kacelnik & Bateson, 1997; Zou, Scholer, & Higgins, 2014). A growing number of researchers has highlighted the relevance of emotional determinants of risk taking (e.g., anger, fear, guilt; Kouchaki, Oveis, & Gino, 2014; Lerner & Keltner, 2001; Lopes, 1987). Building on this work, we pioneer the investigation of an emotional underpinning of risk taking: nostalgia.

Risk aversion is often magnified by the tendency to hold onto conventions and traditions. Examples of that tendency are the existence bias (believing that mere existence is goodness; Eidelman, Crandall, & Pattershall, 2009), the status-quo bias (holding on to the current option over switching to another one; Samuelson & Zeckhauser, 1988), and organizational inertia (continuing on the current trajectory; Singh, 1986). On this basis, one might assume that embracing the past by engaging in nostalgic reverie would lead to risk aversion. In this article, we argue, perhaps counterintuitively, that nostalgia increases risk taking.

We pursue two aims. First, we examine how nostalgia influences financial risk taking. We define financial risk taking as engaging in behavior that entails the chance of financial losses as well as gains (Josef et al., 2016). This definition encompasses the notion that risk involves outcome variability (Figner & Weber, 2011; Markowitz, 1952) and exposure to uncertainty concerning the realization of losses or gains

(Holton, 2004; Sitkin & Pablo, 1992). Prior literature has indicated that nostalgia is a discrete emotion that strengthens social connectedness (Sedikides et al., 2015). Social connectedness, in turn, provides a basis for financial risk taking (Hsee & Weber, 1999; Mandel, 2003). Consequently, we examine whether, by virtue of its capacity to strengthen social connectedness, nostalgia increases financial risk taking. Second, we focus on a specific type of social support: perceived family support. Rooted in nostalgic recollections, family support “cushions” the potential downside of risky decisions.

## Nostalgia, Social Connectedness, and Financial Risk Taking

Laypersons view nostalgia as a predominantly positive, self-relevant, social, and past-oriented emotion (Hepper, Ritchie, Sedikides, & Wildschut, 2012). These lay views dovetail with formal dictionary definitions. “The New Oxford Dictionary of English” (1998) defines nostalgia as “a sentimental longing or wistful affection for the past” (p. 1266).

<sup>1</sup>Nanyang Technological University, Singapore

<sup>2</sup>London Business School, UK

<sup>3</sup>University of Southampton, UK

### Corresponding Author:

Xi Zou, Nanyang Business School, Nanyang Technological University, Block S3, 50 Nanyang Avenue, Singapore 639798.  
Email: ZOU.XI@ntu.edu.sg

Empirical evidence has confirmed the cross-cultural generalizability of this conceptualization of nostalgia (Hepper et al., 2014). In all, nostalgia is a discrete emotion that is distinct from other self-relevant emotions (e.g., homesickness, pride, guilt, shame, embarrassment, self-compassion; Van Tilburg, Wildschut, & Sedikides, 2018).

The sociality of nostalgia is its hallmark. For example, nostalgic narratives depict the self in relation to close others (e.g., family members, romantic partners, friends; Holak & Havlena, 1992; Wildschut, Sedikides, Arndt, & Routledge, 2006). Also, nostalgia strengthens social connectedness (i.e., the sense of belongingness and acceptance), as laboratory and field experiments have established. To illustrate, nostalgic (compared with control) participants feel loved and protected, manifest lower attachment anxiety and avoidance, report greater levels of social support and interpersonal competence, and engage in prosocial behavior such as charitable donations (Wildschut et al., 2006; Zhou, Sedikides, Wildschut, & Gao, 2008; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). Nostalgia's capacity to strengthen social connectedness is a key building block for understanding the impact of this emotion on risk taking. We turn to this issue next.

When one is immersed in nostalgic reverie, "the mind is 'peopled'" (Hertz, 1990, p. 195), as close, supportive figures from one's past are brought to life and become part of one's present (Sedikides, Wildschut, Arndt, & Routledge, 2008). In this regard, family is arguably the most important source of social support (Regalia, Manzi, & Scabini, 2013; Sabatelli & Bartle-Harings, 2003). To a substantial degree, nostalgia involves family members (Abeyta, Routledge, Roylance, Wildschut, & Sedikides, 2015; Holak & Havlena, 1992; Wildschut et al., 2006). One's life is intertwined with that of the family. One experiences momentous life events (e.g., birthday celebrations, graduations, marriage, birth of a child) and cultural life scripts (e.g., Thanksgiving meals, Christmas holidays, summary vacations, 4th of July picnics; Berntsen & Rubin, 2004) in the receptive company of family members, thus building a repertoire of nostalgic memories on which to draw later. These memories are particularly likely to be meaningful. People state that their families are the most important contributor to meaning in their lives and rate their families as the number one source (out of 13) of personal meaning (Lambert et al., 2010, Studies 1-2). In addition, perceived family support predicts personal meaning in life (Lambert et al., 2010, Studies 3-5).

Critically, family provides the scaffolding for financial risk taking. In research by Hsee and Weber (1999), Chinese (compared with American) participants took more risks in financial decisions. This cross-cultural difference in risk taking was mediated by Chinese participants' greater perceived access to financial support from family members. A larger number of family contacts cushion the downside of risky decisions. Indeed, family functions as a buffer against hardship (e.g., negative feedback, stressful life events) both in

Eastern culture (Cai, Sedikides, & Jiang, 2013) and in Western culture (Scabini & Manzi, 2011). The finding that family support precipitates risk-taking behaviors has been conceptually replicated in both cultures. Individuals primed with interdependent (compared with independent) self-construal report having larger social support networks (including family) and subsequently take more risks (Mandel, 2003). Similarly, participation in online communities increases risk taking in financial decisions among individuals who have strong (compared with weak) relationships with other community members, that is, among individuals who perceive others as a family (Zhu, Dholakia, Chen, & Algesheimer, 2012).

Based on our literature review and rationale, we deduce that nostalgia will increase risk taking via its capacity to strengthen perceived family support. Nostalgic recollections are a deposit in the "bank of our memory" (Davis, 1977, p. 420) that can be retrieved during hard times. This sense of abundant social support, due largely to accumulated family experiences, forms a psychological safety net that affords individuals the opportunity to engage in riskier behavior. Nostalgia reminds individuals that they can rely on family members to catch their fall when risky decisions go sour.

## The Role of Affect

The affective signature of nostalgia is bittersweet, but predominantly positive (Sedikides & Wildschut, 2016a). The content of nostalgic narratives is more positive than negative (Batcho, 2007; Wildschut et al., 2006), and recollecting nostalgic (vs. ordinary) autobiographical events gives rise to more positive affect (PA) than negative affect (NA; Stephan, Sedikides, & Wildschut, 2012; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010). Nostalgia inductions generally increase PA but not NA, yet the smaller effect on increased NA is significant when integrated across studies (Leunissen, Wildschut, Sedikides, & Routledge, 2018). Although research continues to establish that the effects of nostalgia are not simply reducible to PA or NA (Cheung et al., 2013; Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012; Stephan et al., 2012; Stephan et al., 2015; Stephan et al., 2014; Turner, Wildschut, & Sedikides, 2012; Turner, Wildschut, Sedikides, & Gheorghiu, 2013; Van Dijke, Wildschut, Leunissen, & Sedikides, 2015; Van Tilburg, Igou, & Sedikides, 2013; Van Tilburg, Sedikides, & Wildschut, 2015; Zhou et al., 2012), our present focus on risk taking demands a look at affect.

There is a diverse corpus of research on the link between affect and risk taking, but the empirical landscape is irregular. Two prominent theoretical models offer some guidance. The affect infusion model (AIM;Forgas, 1995) proposes that positive mood increases risk taking, because it attunes individuals to the positive potential of risky situations (upside risk). By contrast, negative mood renders salient downside risk. Consistent with the AIM, induced positive (compared with

negative) mood increases risk taking (Chou, Lee, & Ho, 2007; Yuen & Lee, 2003). The mood-maintenance hypothesis (MMH; Isen & Patrick, 1983) presents a different view. It proposes that, when in a positive mood, individuals take fewer risks to avoid losses that could spoil their felicitous state. Conversely, individuals who experience NA take more risks, in the hope of achieving gains that will ameliorate their mood. The MMH, too, has garnered empirical support (Hockey, Maule, Clough, & Bdzola, 2000; Leith & Baumeister, 1996; Mano, 1992). To be sure, we can only scratch the surface of this complex literature here. Suffice to say that, in light of prior theory and evidence, it is prudent to consider the role of affect, and we did so in Studies 3 to 5.

## Overview

We hypothesized that (a) nostalgia increases financial risk taking and (b) nostalgia does so by virtue of its capacity to strengthen perceived social support—specifically support from family members. We started with a preliminary investigation in which we documented the external validity of the link between nostalgia and financial risk taking, testing a sample of business owners. In Study 1, we established direction of causality by manipulating nostalgia and testing its effect on risk taking in a laboratory experiment. In Study 2, we used a measurement-of-mediation design (Baron & Kenny, 1986). We assessed individual differences in nostalgia proneness, various types of perceived social support, and risk taking. We then tested mediational models in which nostalgia predicted higher risk taking through perceived family support. To specify further the mediating mechanism, we next implemented an experimental-causal-chain design (Spencer, Zanna, & Fong, 2005). Specifically, in Study 3, we induced nostalgia and measured family support. In Study 4, we then induced family support and measured risk taking. Finally, in Study 5, we manipulated nostalgia and measured both family support and risk-taking, testing the full mediational model. In the latter three studies, we also controlled for the role of affect.

We tested all participants available during the designated study periods under the stipulation that statistical power should exceed .80, assuming a medium-sized effect ( $r = .30$ ) and two-tailed alpha of .05.<sup>1</sup> We calculated the required minimum sample size using G\*Power 3.1 and exceeded it in each study. In the experiments (Studies 1, 3, 4, and 5), we administered manipulation checks. A description of these checks and (supportive) results, together with the stimulus materials, is available at Online Supplement.

## Preliminary Investigation

We first sought to document a basic relation between nostalgia and risk taking. We recruited 210 U.S. business owners through Qualtrics. Three participants did not complete the survey ( $n = 207$ ; 128 women;  $M_{\text{age}} = 37.43$ ,  $SD_{\text{age}} = 10.98$ ).

To maximize completion rates and meet strict survey space limitations, we measured study variables with brief measures. We assessed nostalgia proneness with the 7-item Southampton Nostalgia Scale (SNS; Sedikides et al., 2015). Participants first read a dictionary definition of nostalgia (“A sentimental longing or wistful affection for the past”; “The New Oxford Dictionary of English,” 1998) and then responded to the items (e.g., “How often do you experience nostalgia?”) on a 7-point scale (1 = *very rarely*, 7 = *very frequently*;  $M = 4.89$ ,  $SD = 1.38$ ;  $\alpha = .93$ ). Next, we administered Covin and Slevin’s (1989) 3-item risk-taking scale. Each item consisted of a stem (e.g., “What is your preferred way of running your business?”) with three-tailored response options: a low-risk option (1 = *explore potential opportunities gradually through cautious, incremental behavior*), a neutral midpoint (2 = *equally the same*), and a high-risk option (3 = *take bold, wide-ranging actions to achieve the firm’s objectives*). We averaged the three items to create a risk-taking index, with higher scores indicating more risk taking ( $M = 1.86$ ,  $SD = 0.54$ ;  $\alpha = .57$ ).<sup>2</sup> As hypothesized, nostalgia proneness was positively correlated with risk taking  $r(207) = .14$ ,  $p = .041$ . This positive relation between nostalgia and risk taking remained significant after controlling for (a) demographics, (b) business characteristics, and (c) Big Five personality (Online Supplement). Our preliminary correlational investigation sets the stage for an in-depth examination of the link between nostalgia and risk taking. Yet, to establish direction of causality, it is first necessary to experimentally manipulate nostalgia. We did so in Study 1.

## Study 1

In Study 1, we tested experimentally the causal role of nostalgia. We hypothesized that, after reflecting on a nostalgic (vs. ordinary) autobiographical event, participants would be more likely to take financial risks.

## Method

**Participants.** We recruited 169 participants (115 women;  $M_{\text{age}} = 28.64$ ,  $SD_{\text{age}} = 7.13$ ) from the participant pool of a U.K. business school. Participants received £10 (approximately US\$15) and were eligible for additional payment contingent upon performance.

**Materials and procedure.** We induced nostalgia with the event reflection task (ERT; Sedikides et al., 2015). We randomly assigned participants to write about either a nostalgic event or an ordinary event from their past. Participants in the nostalgic-event (ordinary-event) condition read the following instructions:

Please think of a nostalgic (ordinary) event in your life. Specifically, try to think of a past event that makes you feel most nostalgic (is ordinary). Bring this nostalgic (ordinary) experience

to mind. Immerse yourself in the nostalgic (ordinary) experience. How does it make you feel?

In both conditions, participants listed four keywords describing the event and wrote a narrative account of the experience. Next, they completed a manipulation check assessing state nostalgia (e.g., "Right now, I am feeling quite nostalgic"; 1 = *strongly disagree*, 6 = *strongly agree*; Online Supplement), followed by the Automatic Balloon Analogue Risk Task (autoBART; Pleskac, Wallsten, Wang, & Lejuez, 2008), a validated behavioral measure of risk taking (Lauriola, Panno, Levin, & Lejuez, 2014). The autoBART models real-world financial risk taking by tasking participants to balance the potential for monetary reward versus loss. Participants were instructed to inflate 30 virtual balloons. For each balloon, they specified in advance how far they wished to inflate it (i.e., number of pumps). Balloons would definitely pop at the 128th pump, but actually each balloon was set to pop at a number between 1 and 128. For each successful pump, participants would be awarded £0.005. However, if a balloon popped, participants would lose all their potential earnings for the given trial. The measure of risk taking was the total number of pumps that participants specified across all 30 trials ( $\alpha = .93$ ).

## Results and Discussion

Participants in the nostalgic-event condition ( $M = 1,922.48$ ,  $SD = 351.31$ ) chose to inflate the balloons more than those in the ordinary-event condition ( $M = 1,758.80$ ,  $SD = 448.29$ ),  $F(1, 167) = 6.97$ ,  $p = .009$ , Bartle-Harings  $\eta_p^2 = .04$ . This finding provides first causal evidence for the hypothesized link between nostalgia and financial risk taking.

## Study 2

In Study 2, we examined whether the link between nostalgia proneness and greater risk taking is mediated by perceptions of social support, in particular family support. Rucker, Preacher, Tormala, and Petty (2011) showed that it is inadvisable to distinguish between "full" versus "partial" mediation based on the (non-)significance of the residual direct effect after controlling for the mediator. Accordingly, we did not adopt this distinction and, instead, report only the indirect effect to evaluate our mediational hypotheses (Hayes, 2013). Finally, by using the term *indirect effect* in the context of this correlational study, we are adopting the parlance of intervening variable models but do not claim evidence for causal relations.

## Method

**Participants.** We recruited 120 English-speaking U.S. residents (50 women;  $M_{\text{age}} = 33.99$ ,  $SD_{\text{age}} = 11.69$ ) via Amazon's Mechanical Turk (MTurk). We paid participants \$0.50 each. We lost one observation due to a data-recording error.

**Materials and procedure.** Participants completed the scales in a fixed order, as listed below.

**Nostalgia proneness.** We assessed nostalgia proneness with the Nostalgia Inventory (NI; Batcho, 1995). Participants read a dictionary definition of nostalgia and then indicated how nostalgic they felt for 20 objects from their past (e.g., "my family," "places") on a 5-point scale (1 = *not at all nostalgic*, 5 = *very nostalgic*;  $M = 3.26$ ,  $SD = 0.64$ ,  $\alpha = .87$ ).

**Perceived social support.** We measured perceived social support with the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). This 12-item scale assesses three sources of perceived social support (1 = *very strongly disagree*, 7 = *very strongly agree*): family (e.g., "I get the emotional help and support I need from my family,"  $M = 5.06$ ,  $SD = 1.53$ ,  $\alpha = .94$ ), significant other (e.g., "I have a special person who is a real source of comfort to me,"  $M = 5.52$ ,  $SD = 1.59$ ,  $\alpha = .96$ ), and friends (e.g., "My friends really try to help me,"  $M = 5.11$ ,  $SD = 1.38$ ,  $\alpha = .95$ ).

**Risk taking.** Next, participants completed an investment task. They were awarded five tickets to start with and instructed to make 12 investment decisions. We informed participants that these decisions would affect their chances of winning a \$20 Amazon voucher (i.e., the more tickets they earned, the greater their chances). For each investment decision, participants had to choose between an option with a certain outcome (scored 0) or an outcome with the same expected value but a higher level of risk (scored 1). Four scenarios involved only losses (loss domain; for example, "Sure loss of 6 tickets" vs. "25% chance to lose 12 tickets and 75% chance to lose 4 tickets"), four involved only gains (gain domain; for example, "Sure gain of 6 tickets" vs. "25% chance to gain 12 tickets and 75% chance to gain 4 tickets"), and four involved a combination of gains and losses (mixed domain; for example, "100% chance of no change" vs. "80% chance to lose 5 tickets and 20% chance to gain 20 tickets"). We informed participants that, in case they finished the task with a negative balance, they would ostensibly have an opportunity to cancel this "debt" by completing another task (although we did not ask them to complete additional tasks). Preliminary analyses revealed that risk domain (loss vs. gain vs. mixed) did not moderate the relation between nostalgia and risk taking. We, therefore, created an overall risk-taking score by averaging across the three domains, and used this overall score as a dependent variable in the analyses reported below ( $M = .58$ ,  $SD = .25$ ,  $\alpha = .79$ ).

## Results and Discussion

We present zero-order correlations in Table 1. Nostalgia was positively associated with increased risk taking. Crucially, nostalgia was also positively associated with perceived family support (but not with perceived support from friends or

**Table 1.** Zero-Order Correlations in Study 2 ( $n = 119$ ).

|                             | 1     | 2    | 3    | 4      | 5      | 6   |
|-----------------------------|-------|------|------|--------|--------|-----|
| 1. Nostalgia                | —     |      |      |        |        |     |
| 2. Age                      | .07   | —    |      |        |        |     |
| 3. Gender                   | .14   | .09  | —    |        |        |     |
| 4. MSPSS: Friend            | .16   | -.04 | .08  | —      |        |     |
| 5. MSPSS: Family            | .26** | -.03 | .00  | .66*** | —      |     |
| 6. MSPSS: Significant Other | .01   | .05  | .06  | .49*** | .39*** | —   |
| 7. Risk taking              | .26** | .14  | -.01 | .02    | .21*   | .14 |

Note. Gender was coded (0 = male, 1 = female). MSPSS = Multidimensional Scale of Perceived Social Support.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

significant others). In turn, perceived family support (but not perceived support from friends or significant others) was linked with increased risk taking. We used the PROCESS macro (Hayes, 2013, Model 4, 10,000 bootstrap samples) to test the indirect effect (denoted as  $ab$ ) of nostalgia on risk taking via perceived family support. Specifically, we included the three MSPSS subscales (family, significant other, and friends) as parallel mediators. Only the indirect effect via perceived family support was significant,  $ab = .028$ ,  $SE = .017$ , 95% CI = [.001, .068],  $ab_{cs} = .070$ .<sup>3</sup> The indirect effects via perceived support from significant others,  $ab = .001$ ,  $SE = .006$ , 95% CI = [-.011, .017],  $ab_{cs} = .002$ , and perceived support from friends,  $ab = -.017$ ,  $SE = .014$ , 95% CI = [-.055, .002],  $ab_{cs} = -.043$ , were not significant. An analysis treating perceived family support as sole mediator, without controlling for the other types of perceived support, also revealed a significant indirect effect,  $ab = .016$ ,  $SE = .010$ , 95% CI = [.0001, .044],  $ab_{cs} = .040$ . Finally, analyses that controlled for age and gender produced identical results.

These findings bolster the specific mediational role of perceived family support (as compared with other sources of social support) in accounting for the relation between nostalgia and risk taking. Notwithstanding the well-documented limitations of measurement-of-mediation designs (Bullock, Green, & Ha, 2010), Study 2 is informative, because it placed our hypotheses at risk (Fiedler, Schott, & Meiser, 2011). That is, failure of either link in the mediational chain would have undermined our model, yet both links were supported.

To specify further the psychological process underlying the relation between nostalgia and risk taking, we drew on the experimental-causal-chain design in our next two studies. Spencer et al. (2005) advocated that a series of experiments testing the individual links in a postulated causal chain can address the inherent limitations (i.e., reverse causation, third-variable problems) of measurement-of-mediation designs. Following their recommendation, we designed two experiments. In Study 3, we manipulated nostalgia and tested its effect on perceived family support (i.e., the proposed mediator). In Study 4, we manipulated perceived family support and tested its effect on risk taking (i.e., the proposed outcome variable).

## Study 3

In Study 3, we tested the first link in the proposed causal chain: Participants who reflected on a nostalgic (compared with ordinary or positive) autobiographical event would report higher levels of perceived family support. Our second objective was to control for the role of positive mood. It is possible that reflecting on any positive experience *per se* increases perceived social support, irrespectively of whether the recalled event is nostalgic or not. We addressed this by including a condition in which participants recalled a positive (i.e., lucky) event from their past. Previous research has validated this lucky-event control condition by demonstrating that it produces the same degree of PA as the nostalgia condition (Stephan et al., 2015; Van Tilburg et al., 2015; Wildschut, Bruder, Robertson, Van Tilburg, & Sedikides, 2014).

## Method

**Participants.** We recruited 165 English-speaking U.S. residents (85 women;  $M_{age} = 34.40$ ,  $SD_{age} = 13.32$ ) via MTurk and remunerated each with 50 cents.

**Materials and procedure.** We randomly assigned participants to the nostalgic-event, ordinary-event, or positive-event condition. We used the same instructions in the nostalgic-event and ordinary-event conditions as in Study 1. In the positive-event condition, participants read:

Please bring to mind a lucky event in your life. Specifically, try to think of a positive past event that was brought on by chance rather than through your own actions (e.g., you unexpectedly found a lost item). Bring this lucky experience to mind. Immerse yourself in the lucky experience. How does it make you feel?

Next, participants completed the same manipulation check as in Study 1 (Online Supplement), followed by the 4-item Family subscale of the MSPSS as in Study 2 ( $\alpha = .96$ ).

## Results and Discussion

The overall main effect of recall type (nostalgic, ordinary, positive) on perceived family support was significant,  $F(2,$

$162) = 9.04, p < .001, \eta_p^2 = .10$ . Participants in the nostalgic-event condition ( $M = 4.19, SD = 1.44$ ) reported greater family support compared with those in the ordinary-event condition ( $M = 2.97, SD = 1.66$ ),  $F(1, 162) = 16.91, p < .001, \eta_p^2 = .14$ , and those in the positive-event condition ( $M = 3.26, SD = 1.55$ ),  $F(1, 162) = 9.42, p = .003, \eta_p^2 = .09$ . Participants in the positive-event and ordinary-event conditions did not differ significantly in perceived family support,  $F(1, 162) = 1.04, p = .310, \eta_p^2 = .01$ .

Reflecting on a nostalgic (compared with ordinary or positive) event from one's past fosters perceptions of family support. These findings are consistent with the first link in the proposed causal chain connecting nostalgia to risk taking via perceived family support. By including the positive-event control condition, we ruled out the possibility that the effect of nostalgia on perceived family support is due to merely the positive mood.

## Study 4

Study 4 examined the second link in the proposed causal chain: Family support increases risk taking. We also assessed PA and NA with the aim to test whether the putative effect of family support on risk taking is due to mood.

### Method

**Participants.** We recruited 137 English-speaking U.S. residents (67 women;  $M_{age} = 34.47, SD_{age} = 11.19$ ) via MTurk. We paid them \$0.50 each.

**Materials and procedure.** We randomly assigned participants to a family–environment condition in which they reflected on an everyday interaction with family members (e.g., sharing a meal) or to an own-devices condition in which they recalled a time when they had to fend for themselves. In the family–environment condition, participants read: “Bring to mind an event involving you and your family. How did you and your family interact (e.g., talked to each other, treated each other) during this event?” In the own-devices condition, participants read: “Bring to mind an experience when you were left to your own devices. How did you manage by yourself during this experience?” We then instructed participants to take a few moments to think about the event and describe, in a few sentences, their experience and the way it made them feel. Five participants in the own-devices condition wrote about scenarios irrelevant to “being left to one's own devices.” We excluded them from the analyses based on an *a priori* decision.

Next, participants completed a manipulation check (e.g., “Thinking about this event, I feel supported”; 1 = *not at all*, 7 = *completely*; Online Supplement), followed by an investment task. Participants could earn tickets, with each ticket increasing their chances of winning a \$20 Amazon coupon. For each decision, they had to choose between an option with

a guaranteed outcome (scored 0) and an option with the same expected value but a higher level of risk (scored 1). These scenarios involved only gains (“Sure gain of 6 tickets” vs. “25% chance to gain 12 tickets and 75% chance to gain 4 tickets”), so that participants always finished the task with a positive balance. We averaged the four choices to form an overall measure of risk taking ( $M = .42, SD = .30, \alpha = .50$ ). Finally, participants rated their current mood on 10 adjectives (0 = *does not apply at all to me*, 8 = *applies very much to me*). We created a PA score comprising the adjectives “good,” “content,” “happy,” “calm,” “peaceful,” and “pleased” ( $M = 6.62, SD = 1.62, \alpha = .93$ ), and an NA score comprising the items “anxious,” “tense,” “nervous,” and “down” ( $M = 2.63, SD = 1.93, \alpha = .93$ ).

## Results and Discussion

Participants in the family–environment condition ( $M = .48, SD = .30$ ) manifested higher risk taking compared with those in the own-devices condition ( $M = .36, SD = .28$ ),  $F(1, 130) = 5.98, p = .016, \eta_p^2 = .04$ . The two conditions did not differ significantly, however, on PA,  $F(1, 130) = 0.55, p = .45, \eta_p^2 = .003$ ; or NA  $F(1, 130) = 0.01, p = .920, \eta_p^2 = .001$ . Crucially, the difference between the family–environment and own-devices conditions on risk taking remained significant when we controlled for PA and NA in an ANCOVA,  $F(1, 128) = 5.56, p = .020, \eta_p^2 = .04$ . The ANCOVA further revealed that both PA,  $\beta = .12, F(1, 128) = 1.55, p = .216, \eta_p^2 = .01$  and NA,  $\beta = .25, F(1, 128) = 6.49, p = .012, \eta_p^2 = .05$ , were positively associated with risk taking, but only the latter association was statistically significant.

Jointly, Studies 3 to 4 demonstrated that the causal effect of nostalgia on risk taking involves a process whereby nostalgia fosters family support (Study 3), which in turn increases risk taking (Study 4). The experimental-causal-chain design of these studies complemented the measurement-of-mediation approach of Study 2.

## Study 5

In Study 5, we seek to replicate the full mediation model by experimentally manipulating nostalgia and then measuring both perceived family support and risk taking. We also seek to test our hypothesis by using another well-established risk-taking measure while controlling for PA and NA.

### Method

**Participants.** We recruited 615 English-speaking U.S. residents (333 women, 279 men, three undeclared;  $M_{age} = 36.39, SD_{age} = 11.71$ ) via MTurk and remunerated them with \$1.<sup>4</sup>

**Materials and procedure.** We randomly assigned participants to the nostalgic-event or ordinary-event condition. We used the same instructions and manipulation check as in Studies 1

and 3 (Online Supplement). Subsequently, participants completed a three-item measure assessing perceived family support (e.g., "I can count on my family for financial support, should I ever need it"; 1 = *strongly disagree*, 6 = *strongly agree*). We averaged the three items to create a family-support index ( $M = 5.23$ ,  $SD = 1.58$ ,  $\alpha = .96$ ). Next, we assessed risk taking with the three-item Investment subscale of the Domain-Specific Risk-Taking (DOSPERT) Scale (e.g., "Invest 5% of your annual income in a very speculative stock"; 1 = *extremely unlikely*, 7 = *extremely likely*; Weber, Blais, & Betz, 2002). We averaged the three items to create a risk-taking index ( $M = 4.05$ ,  $SD = 1.43$ ,  $\alpha = .75$ ). Finally, participants completed a short form of the Positive Affect and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), gauging their current mood on 12 adjectives (Martin, Abend, Sedikides, & Green, 1997). Adjectives were rated on a 5-point scale (1 = *not at all*, 5 = *very much*). We created a PA score by averaging the adjectives "pleased," "content," "happy," "satisfied," "glad," and "delighted" ( $M = 2.96$ ,  $SD = 1.03$ ,  $\alpha = .93$ ), and an NA score by averaging "depressed," "gloomy," "miserable," "distressed," "sad," and "annoyed" ( $M = 1.60$ ,  $SD = 0.87$ ,  $\alpha = .94$ ).

## Results and Discussion

**Main analyses.** The main effect of recall type (nostalgic, ordinary) on perceived family support was significant,  $F(1, 613) = 7.53$ ,  $p = .006$ ,  $\eta_p^2 = .012$ . Replicating Study 3, participants in the nostalgic-event condition ( $M = 5.40$ ,  $SD = 1.53$ ) reported a higher level of family support than those in the ordinary-event condition ( $M = 5.05$ ,  $SD = 1.61$ ). The main effect of recall type on risk taking was also significant,  $F(1, 613) = 8.20$ ,  $p = .004$ ,  $\eta_p^2 = .013$ . As in Study 1, risk taking was higher in the nostalgic-event ( $M = 4.22$ ,  $SD = 1.42$ ) than ordinary-event ( $M = 3.89$ ,  $SD = 1.43$ ) condition. We used the PROCESS macro (Hayes, 2013, Model 4, 10,000 bootstrap samples) to test the indirect effect (denoted as *ab*) of nostalgia on risk taking via perceived family support. This indirect effect was significant,  $ab = .032$ ,  $SE = .019$ , 95% CI = [.005, .084],  $ab_{cs} = .011$ .

**Controlling for affect.** PA was significantly higher in the nostalgic-event ( $M = 3.05$ ,  $SD = 1.03$ ) than ordinary-event ( $M = 2.87$ ,  $SD = 1.03$ ) condition,  $F(1, 611) = 4.36$ ,  $p = .037$ ,  $\eta_p^2 = .007$  (degrees of freedom vary, because two participants did not complete the PANAS). Attesting to nostalgia's bittersweet affective signature, participants in the nostalgic-event condition ( $M = 1.69$ ,  $SD = 0.94$ ) also reported more NA than those in the ordinary-event condition ( $M = 1.51$ ,  $SD = 0.78$ ),  $F(1, 611) = 6.51$ ,  $p = .011$ ,  $\eta_p^2 = .011$ . These results underscore the importance of controlling for affect. Accordingly, we repeated our previous analyses, including PA and NA as covariates.

An ANCOVA on family support revealed that the main effect of recall type remained significant when controlling for

PA and NA,  $F(1, 609) = 6.71$ ,  $p = .010$ ,  $\eta_p^2 = .011$ . Furthermore, PA was positively associated with perceived family support,  $\beta = .24$ ,  $F(1, 609) = 36.63$ ,  $p < .001$ ,  $\eta_p^2 = .057$ , whereas NA was negatively associated with it,  $\beta = -.10$ ,  $F(1, 609) = 6.94$ ,  $p = .009$ ,  $\eta_p^2 = .011$ . The recall-type main effect on risk taking also remained significant when controlling for PA and NA,  $F(1, 609) = 4.54$ ,  $p = .034$ ,  $\eta_p^2 = .007$ . Moreover, both PA,  $\beta = .15$ ,  $F(1, 609) = 14.93$ ,  $p < .001$ ,  $\eta_p^2 = .024$ ; and NA,  $\beta = .18$ ,  $F(1, 609) = 20.27$ ,  $p < .001$ ,  $\eta_p^2 = .032$ , were positively associated with risk taking (similar to Study 4). Crucially, the indirect effect of nostalgia (vs. control) on risk taking via perceived family support remained significant when we included PA and NA as covariates,  $ab = .028$ ,  $SE = .018$ , 95% CI = [.002, .075],  $ab_{cs} = .010$ .

**Additional indirect effects.** In explorative analyses, we also examined the potential mediational role of PA and NA. To be precise, we treated family support, PA, and NA as parallel mediators of the event-type effect (nostalgia, ordinary) on risk taking. Along with a significant indirect effect via family support ( $ab = .031$ ,  $SE = .019$ , 95% CI = [.004, .082],  $ab_{cs} = .011$ ), this analysis revealed positive indirect effects via PA ( $ab = .032$ ,  $SE = .019$ , 95% CI = [.003, .079],  $ab_{cs} = .011$ ) and NA ( $ab = .056$ ,  $SE = .027$ , 95% CI = [.014, .121],  $ab_{cs} = .020$ ). These results should be interpreted with caution, because affect was assessed after (rather than before) risk taking. Nevertheless, they point to PA and NA as potential additional mechanisms linking nostalgia to increased risk taking—a promising direction for future research. In all, Study 5 furnished ancillary evidence that nostalgia increases risk taking by virtue of its capacity to boost perceptions of family support, and does so independently of PA and NA.

## General Discussion

We proposed and documented that nostalgia is a psychological resource, fostering perceptions of family support and subsequently increasing financial risk taking. We built on two empirical pillars, which established that (a) nostalgia strengthens social bonding (Sedikides, Hart, & De Cremer, 2008; Sedikides et al., 2008; Sedikides et al., 2015; Wildschut et al., 2006; Wildschut et al., 2010) and (b) family support or social networks are crucial in shaping individuals' risk taking (Cai et al., 2013; Hsee & Weber, 1999; Mandel, 2003; Weber & Hsee, 1999). Our findings enrich the literature pertaining to emotion and risk-taking behavior and have practical implications.

## Theoretical and Practical Implications

First, our research addressed the question of how discrete emotions influence risk taking in the financial domain. Although a body of work has been concerned with the impact of negative discrete emotions (e.g., fear, anger, guilt) on risk preference (Fessler, Pillsworth, & Flamson, 2004; Kouchaki

et al., 2014; Leith & Baumeister, 1996; Lerner & Keltner, 2001), virtually no attention has been directed to positive discrete emotions. Our research fills this knowledge void by showing that the discrete positive emotion of nostalgia increases risk taking. Also, the abovementioned body of work has been guided by appraisal or perceived control perspectives, whereas we capitalized on the motivational potency of nostalgia (Sedikides et al., 2018; Sedikides & Wildschut, 2016b; Stephan et al., 2014). Our studies pointed to a new pathway through which emotion affects on risk-taking behavior. In particular, our studies (a) established a direct causal link between nostalgia and risk taking and (b) demonstrated that a discrete emotion affects risk taking through a social mechanism. Similar to an appraisal framework (Lerner, Li, Valdesolo, & Kassam, 2015), nostalgia influences decision makers in part by rendering certain knowledge constructs accessible. And yet, different from an appraisal framework that emphasizes perceived control (Smith & Ellsworth, 1985), nostalgia influences the decision maker's perception of family support, which in turn increases the propensity for risk.

Our studies also make theoretical and empirical contributions to the nostalgia literature. Nostalgia has a powerful, positive influence on how individuals perceive themselves, their lives, and their social relationships (Abeyta, Routledge, & Juhl, 2015; Sedikides, Hart, & De Cremer, 2008; Sedikides, Wildschut, et al., 2008; Sedikides et al., 2015). Research has established nostalgia's capacity to buffer the negative effect of negative performance feedback (Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012), boredom (Van Tilburg et al., 2013), existential insecurity (Routledge et al., 2011), loneliness (Zhou et al., 2008), as well as aversive organizational experience (e.g., low procedural justice; Van Dijke et al., 2015) and job burnout (Leunissen, Sedikides, Wildschut, & Cohen, 2018). Despite the implications of nostalgia for judgment and decision making, no research has sought to explore whether this emotion influences risk taking, something that our work did.

Establishing the link between nostalgia and risk taking also has practical implications. Social relationships and social support are dynamic and, as such, frequently weaken or deteriorate (Cacioppo & Cacioppo, 2014). Nostalgic recollections may play a vital role in replenishing and sustaining perceived social support, thus facilitating risk taking. Although people may typically think of entrepreneurs or risk takers as loners who chart their own paths, our findings suggest that risk takers, even if they happen to be loners, are not psychologically alone. Their memory bank is likely filled with nostalgic memories that contribute a sense of family support. In this regard, our findings call for more research on the implications of social support in general for financial decision making. Whereas the benefits of social support for mental and physical health are well documented (Holt-Lunstad, Smith, & Layton, 2010; House, Landis, & Umberson, 1988), research on its implications for decision making is relatively scarce.

In the context of financial decision making, the literature indicates that higher financial resources can increase risk-taking behavior. For example, in the stock market arena, previous capital gains can raise investors' optimism and risk taking (Barberis, Huang, & Santos, 2001). Similarly, prior gains increase risk taking in gambling, as "beating the house" leads to riskier gambles (Thaler & Johnson, 1990). Likewise, the number of stock options given to a CEO, which can serve as a source of wealth, is positively related to investment in risky projects (Guay, 1999; Rajgopal & Shevlin, 2002). Our findings suggest that nostalgic recollections, due to their capacity to foster perceptions of family support, act like financial resources in increasing risk taking, consistent with the literature on the mutability of social and financial assets in determining decision making (Vohs, Mead, & Goode, 2006; Zhou, Vohs, & Baumeister, 2009). Although evidence points to the particular relevance of family support, it would be premature to rule out a role for friends and significant others. After all, friends and significant others are frequently the focus of nostalgic memories (Holak & Havlena, 1992; Wildschut et al., 2006), and they often do provide financial support. Nevertheless, we think that individuals are less likely to rely on friends (than family) to "cushion" their financial fall, because doing so creates potential embarrassment and rejection (Bohns & Flynn, 2010; Downey & Feldman, 1996; Shapiro, 1983). Also, one may rely less on significant others (than family) because, when finances are shared, one's own hardship also impairs the significant other's capacity to provide assistance.

Individuals are generally risk-averse (Arrow, 1971; Bernoulli, 1739/1954; Pratt, 1964). Risk aversion is beneficial to the individual at times and harmful at other times, but is particularly problematic to group or organizational effectiveness. For example, organizational change comes with risk, and, if members are averse to it, organizations may forgo opportunities or needed reform. Finding ways to increase members' sense of social support may help overcome this intransigence. The key benefit of nostalgia (vs. *in vivo* social support from a given environment) is that it can be stored and used even in the absence of actual support. In that regard, Gardner, Pickett, and Knowles (2005) distinguished between direct and indirect strategies for meeting interpersonal needs. Direct strategies (e.g., conversations) are suitable when possible companions are available, whereas indirect strategies (i.e., mental representations of interpersonal relationships as a way to augment social connectedness) are suitable when possible companions are unavailable. Nostalgia is an effective indirect strategy. Going beyond interpersonal relationships, groups, and organizations can tap into the psychological resource of nostalgia, when needed. For example, voicing behavior is a critical form of risk taking in the workplace (Sedikides, Hart, & De Cremer, 2008; Singh, 1986). By cultivating a family organization culture and, more specifically, nostalgia about the organization as a "family" (Gabriel, 1993; Leunissen et al., 2018; Wildschut et al., 2014), organizations

could increase voicing and other risk-taking behaviors that are beneficial to them.

### Limitations and Future Research

We examined risk taking in the financial domain. The literature has suggested that individuals have distinct risk preferences across life domains. For example, those who exhibit high levels of risk taking in investments may simultaneously manifest moderate or low levels of risk taking in other life domains (e.g., recreational activities such as sky-diving; Blais & Weber, 2006; Hanoch, Johnson, & Wilke, 2006). Future research will do well to examine a broader range of risk-taking domains. Weber and Hsee (1998) proposed that strong family and in-group bonds act as “social diversification of the risks of risky options” (p. 1208).

This implies that such strong interpersonal ties should increase risk taking in any domain where downside risk can be socially diversified.

The social domain is an interesting case in point. Weber, Hsee, and Sokolowska (1998) proposed that

The cushion hypothesis predicts that collectivist insurance against the downside in material risks . . . is obtained at the cost of having to worry more about social risks . . . since the maintenance of one's social network is of greater importance in those cultures. (p. 174)

In support, Mandel (2003) demonstrated that priming interdependent (compared with independent) self-construal increased risk taking in financial domains but reduced it in social domains. However, the voluminous attachment literature indicates that strong social bonds provide a secure base for potentially risky exploration (Bowlby, 1988; Mikulincer & Shaver, 2003). Green and Campbell (2000) demonstrated that securely attached adults expressed greater interest in exploratory behavior, including social, environmental, and intellectual exploration. Building on this work, Stephan et al. (2015) found that, by virtue of its capacity to strengthen social bonds, nostalgia boosts interest in exploratory behavior. Jointly, these contrasting viewpoints suggest that nostalgia could increase risk taking in the social domain, provided that the risky behavior does not jeopardize one's existing social support network. Consistent with this possibility, Wildschut et al. (2006) showed that nostalgia boosts perceived competence to initiate new relationships. This is a promising research direction. Individuals often shy away from making new friends or engaging in networking activities, because of the social risks. Yet, sometimes it is necessary to take such social risks to form meaningful, long-term relationships or develop one's career.

We assumed that facilitating risk taking is beneficial. However, not all risk-taking behaviors are constructive. Dysfunctional risk taking can be seen in many life domains, ranging from excessive gambling to sunbathing without

sunscreen to taking questionable deductions on income tax returns (Blais & Weber, 2006). Future research should examine whether nostalgia can influence dysfunctional risk taking. It is plausible that nostalgia would reduce such behaviors. Precisely because nostalgia brings to mind the family, such thoughts or images may result in regret, shame, or guilt in the course of dysfunctional risk-taking behaviors, thus reducing them. For example, the tendency for obsessive gambling to elicit guilt (Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005) should be amplified when one's family is salient. Indeed, Abbott-Chapman, Denholm, and Wyld (2008) showed that teenagers with a strong support network were less likely to engage in dysfunctional risk taking (e.g., gamble, have unprotected sex, use drugs).

### Coda

Nostalgia influences risk taking. Specifically, nostalgic recollections foster perceptions of family support, which in turn increase risk taking. Our findings highlight the implications of the emotion of nostalgia for decision making while calling for an empirical agenda that links the two.

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### Notes

1. In the absence of prior research on the link between nostalgia and risk taking, we based the medium effect-size estimate on four studies by Zhou et al. (2008) testing the association between nostalgia and perceived social support (the postulated mediator, family support, being a specific form thereof). Zhou et al. reported the following effect sizes in Studies 1 to 4, respectively:  $r(758) = .33$ ,  $r(84) = .21$ ,  $r(66) = .33$ , and  $r(193) = .41$  (all  $p < .01$ ). The weighted effect-size across these four studies is  $\bar{r} = .35$ , 95% CI = [.290, .409].
2. The low Cronbach's alpha for the risk-taking scale (.57) is consistent with prior research (Dai et al., 2014, reported  $\alpha = .58$ ) and not unusual for a brief scale. Interitem correlations were medium-sized and significant:  $r_{12} = .29$ ,  $r_{13} = .30$ , and  $r_{23} = .31$ , all  $p < .001$ .
3. We selected  $ab_{-cs}$ , the completely standardized indirect effect, as effect-size measure (Hayes, 2013). This effect size can be applied in single- and multiple-mediator models. In the simple case of a single-mediator model,  $ab_{-cs}$  can be converted to the effect size  $\nu$  (upsilon) advocated by Lachowicz, Preacher, and Kelley (2018) by squaring it.
4. Study 5 combined elements from preceding studies by testing, in a single experiment, the effect of nostalgia on risk taking (as in

Study 1), the effect of nostalgia on family support (as in Study 3), and the indirect effect of nostalgia on risk taking via family support (as in Study 2). In light of accumulated evidence from these earlier studies, we revised down the assumption of medium effect sizes, on which we based our original sample size calculations. Conservatively, we specified that statistical power exceed .80, assuming a small effect ( $r = .15$ ) and two-tailed alpha of .05. This required  $n = 580$  (Schoemann, Boulton, & Short, 2017), which we exceeded to allow for attrition.

## Supplemental Material

Supplemental material is available online with this article. Datasets and syntax files are available at : <https://osf.io/hvf9d/>.

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