

Fearing fear: gender and economic discourse

Julie A. Nelson

Mind & Society

Cognitive Studies in Economics and Social Sciences

ISSN 1593-7879

Volume 14

Number 1

Mind Soc (2015) 14:129-139

DOI 10.1007/s11299-014-0148-6



Your article is protected by copyright and all rights are held exclusively by Springer-Verlag Berlin Heidelberg. This e-offprint is for personal use only and shall not be self-archived in electronic repositories. If you wish to self-archive your article, please use the accepted manuscript version for posting on your own website. You may further deposit the accepted manuscript version in any repository, provided it is only made publicly available 12 months after official publication or later and provided acknowledgement is given to the original source of publication and a link is inserted to the published article on Springer's website. The link must be accompanied by the following text: "The final publication is available at link.springer.com".

Fearing fear: gender and economic discourse

Julie A. Nelson

Received: 23 September 2013 / Accepted: 12 June 2014 / Published online: 14 July 2014
© Springer-Verlag Berlin Heidelberg 2014

Abstract Economic discourse—or the lack of it—about fear is gendered on at least three fronts. First, while masculine-associated notions of reason and mind have historically been prioritized in mainstream economics, fear—along with other emotions and embodiment—has tended to be culturally associated with femininity. Research on cognitive “gender schema,” then, may at least partly explain the near absence of discussions of fear within economic research. Second, in the extremely rare cases where fear and emotion are alluded to within the contemporary economics literature on risk aversion, there is a tendency to (overly-)strongly associate them with women. Finally, historians and philosophers of science have suggested that the failure to consider the full range of human emotions and experience may be itself rooted in fear: a fear of the feminine. This aversion to discussing fear—especially fear as experienced by men—contributes to serious problems, especially in regard to financial market instability and ecological threats.

Keywords Cognitive schema · Fear · Gender · Risk aversion · Stereotypes

1 Introduction

Economic discourse—or the lack of it—about fear is gendered on at least three fronts. First, while masculine-associated notions of reason, mind, choice, control, and mechanism have historically been prioritized in mainstream economics, fear—along with other emotions, embodiment, vulnerability, and lived experience—has tended to be feminine-associated. Contemporary psychological and neuroscientific

J. A. Nelson (✉)

Department of Economics, University of Massachusetts Boston, 100 Morrissey Blvd.,
Boston, MA 02125, USA
e-mail: Julie.nelson@umb.edu

research on cognitive “gender schema,” then, may at least partly explain the near absence of discussions of fear within economic research. Second, in the extremely rare cases where fear and emotion are alluded to within the contemporary economics literature on risk aversion, there is a tendency to (overly-)strongly associate them with women. Finally, dominant Western cultural metaphors not only associate fear with femininity, but also with inferiority and a lack of control. Historians and philosophers of science have suggested that failures to acknowledge the full range of human emotions and experience may be themselves be rooted in fear: a fear of the feminine.

This essay discusses these three gendered aspects of the relationship between the economics discipline and fear, and concludes with a brief discussion of the problems created. Economists’ aversion to discussing fear—especially fear as experienced by men—seriously hampers the discipline’s ability to generate useful knowledge in the face of financial market instability and ecological threats.

2 Removing (feminine) emotions from economics

Findings from cognitive psychology, social psychology, evolutionary biology, neuroscience, and related scientific fields have recently been drawn on to enrich economists’ study of human behavior. When studying how embodied humans actually think—as opposed to how a purely rational being would think—“cognitive schema” stand out as important. Psychological and neuroscientific research show how cognitive schema function by making us “organize incoming information and integrate it—through no conscious act of will—into clusters” (e.g., Most et al. 2007, 288), speeding up processing and economizing on mental effort.

The gender binary—that is, the association of a stimulus with either masculinity or femininity—is apparently a fundamental cognitive schema by which we often split the world into two categories. It has been confirmed in a number of studies in cognitive science that we process things more easily and quickly if they fit our mental gender constructs, and have to work more if they do not. For example, subjects tend to take longer and make more mistakes when a male name is read by a female voice than when a male name is read by a male voice (Most et al. 2007); remember lists of words better when words on a list all have the same gender connotation than when they are mixed or neutral (Bem 1981); and have to think longer when a task involves overriding stereotyped associations between gender and strength or weakness (Knutson et al. 2007), or the gender associations of various academic fields (Nosek et al. 2007). These studies suggest that these automatic associations are strong, and without considerable conscious effort and new experiences, may tend to exert considerable invisible power over the way we think.

By the early 1990s, a number of commentators (McCloskey 1985; Nelson 1992; Jennings 1993) had noticed that mainstream economics had formed in close

Table 1 Splitting the world: schemas in mainstream economics

Economics	Not economics
Markets	Social life and family
Mental choice	Bodily experience
Individuals	Relationships
Autonomy	Interdependence
Self-interest	Other-interest
Rationality	Emotion
Quantitative	Qualitative
Masculine	Feminine

adherence to the “masculine” side of many dominant Western cultural binaries.¹ Consider Table 1. Within neoclassical orthodoxy, economics is generally taken to be defined by concern with markets, choice, or both. Women’s historical experiences in families, tending to the day-to-day bodily needs of people for food and care, are not studied. The economic agent of neoclassical theory is autonomous, self-interested and rational—characteristics that have a long history of association with men and masculinity in Western culture. Interdependence, other-interest, and emotion are, in contrast, culturally coded as feminine. Abstract mathematical methods are favored, while verbal or qualitative knowledge is referred to as (presumably less reliable) “intuition.” Note that this sort of table is *by no means* meant to reinforce the idea that men are “really” more rational, or women are “really” more emotional; it refers to commonly shared cognitive associations within a specific (dominant Western) cultural context. Note also that this metaphorical structure is not only dualistic; it is also hierarchical, with masculinity taking the high-value pole.

This potentially explains at least part of why discussion of emotions such as desire, fear, happiness, anger and love have been absent traditionally from economic discourse. Such discussions have been absent even when, to an outside observer, some reference to feelings might seem to be almost unavoidable. For example, economists’ study of the *desires* of consumers for goods is couched in the cool language of “indifference” (curves). When approaching issues of happiness or *eudemonia*, economists traditionally have reduced these to a desiccated “utility.” The idea that above-market wages may motivate workers, at least in part by changing how they feel about their employers, is discussed not as a *loyalty* wage or as a *reciprocity* wage, but as an “efficiency” wage. While Keynes pointed to the importance of tidal variations in *animal spirits*, especially feelings of optimism and pessimism (fear), the larger push in macroeconomics—even in light of the 2008 and

¹ Gender associations are, obviously, culturally variable. Table 1 describes associations that were influential in the Enlightenment and early development of science in Europe (see Fee 1983; Keller 1985; Harding 1986). Cognitive schema may take shape differently in other contexts and time periods, and may also be formed around other binaries—for example, spiritual/material, cultured/barbarian, Western/Eastern, European/African, and so on—some of which may overlap with, or add nuance to, gendered understandings.

onwards financial crisis—has been to find mathematically model-able “mechanisms” underlying (presumably fundamentally cool and well-ordered) macroeconomic systems.

The avoidance of discussion of fear is particularly notable in the economics of risk and uncertainty. As Pope (2001) explains in detail, an early literature on these topics—engaged in by such luminaries as Pascal and Marshall (Pope 2001, 273, 278)—discussed the direct utility or disutility that a person might experience from the mere act of taking a chance, in addition to their utility or disutility from the resolution of the situation. While awaiting an outcome, a person may experience emotions including fear, worry, curiosity, excitement, and/or hope. The direct utility (positive or negative) of taking a chance might, for example, cause a person experiencing boredom to accept gambles with unfair odds, while a person experiencing worry might be inclined to purchase insurance. Von Neumann and Morgenstern, in their important work on expected utility, were explicitly aware that their formulation left out this direct utility from chance. Unable to find a way to include this, themselves, they left the topic as a challenge for future researchers (Pope 2001, 278–9, 281).

Rather than take on this challenge, however, economists beginning in the late 1940s sanitized the notion of risk, expunging from it any consideration of emotions or the experience of them over time. As Pope (2001) highlights, Friedman and Savage (1948), seeking to show how “an important class of reactions of individuals to risk can be *rationalized*” (1948, 279, emphasis added), collapsed what Pope clearly points out is a multi-period process (of taking a chance, experiencing uncertainty, and finding resolution) to a single-period problem of deciding among “alternatives *each of which is regarded as certain*” (1948, 287, emphasis added). This is the interpretation which caught on, being adopted by other economists including Ramsey, Marshack, and Samuelson (Pope 2001). Marshack explicitly labeled the phenomena of deriving direct utility from chance as “irrational” (1950, 139). By semantically identifying “risk aversion” with decisions over “sure-thing prospects”—that is, by *defining risk* in terms of a situation in which *the experience of taking a risk is markedly absent*—Marshack created a confusion in the economics literature that persists to this day (Pope 2001, 285).

So, while many scholars outside of economics note that emotions, including fear, play an important role in risk-related perceptions and choices (e.g., Lopes 1987; Olsen and Cox 2001; Kahan et al. 2007; Carr and Steele 2010), and recognize that that emotions are, in fact, an important and necessary *component of* cognition and reasonable behavior (Damasio 1994), the economics literature since the 1950s has adopted an abstract and bloodless expected-utility analysis from which both emotions and the passage of time have been expunged. Even behavioral economists, who are presumably more psychology-savvy, tend to write whole studies about risk or loss aversion without much mentioning emotions (Novemsky and Kahneman 2005; Bruhin et al. 2010) or labeling emotions of aversion as “fear” (Sokol-Hessner et al. 2013 (March, online publication)).

Economist Colin Camerer’s “intuition...that loss aversion is often an exaggerated emotional reaction of fear” (Camerer 2005, 132) seems to be a rare exception. While it stands in stark contrast to economists’ traditional, disembodied, expected-

utility-theory axiomatic approach, Camerer's "intuition" is actually a perfectly logical supposition that is strongly supported by empirical research in evolutionary psychology, neuroscience, and prospect theory.

Camerer has also (apparently) raised the question "Why are economists so aversion averse?" (Google 2013). But combining his question about economists with his "intuition" about aversion leads to an perhaps uncomfortable inference: Economists' own behavior may reflect bodily experiences of fear.² We will return to this question in Sect. 4.

3 Associating fear with women

Economists seem to display slightly more enthusiasm for acknowledging the possible emotional basis of risk aversion when these can be associated with women, to a greater degree than with men. Such a position is quite consistent with the cognitive splitting of the world previously discussed, and is apparent in many examples in the recent literature.

"We find that women are indeed more risk averse than men," conclude economists Croson and Gneezy (2009, 448) in their *JEL* review article "Gender Differences in Preferences." There is "Strong Evidence for Gender Differences in Risk Taking," claim Gary Charness and Gneezy in *JEBO* (2012). Croson and Gneezy cite, as a possible explanation, studies that report that "women report more intense *nervousness and fear* than men in anticipation of negative outcomes," while men feel more anger (2009, 452, emphasis added). Other articles also make links between risk aversion and claims about women's stronger emotionality (Fehr-Duda et al. 2006, 306; Eriksson and Simpson 2010, 162). The idea that fundamentally different biology and neurological structures may be the source of differences in male and female psycho-social behaviors has recently had a resurgence in general academic and popular thought (eg, Baron-Cohen 2003).

This literature also reflects the hierarchical nature of dominant gender metaphors in that higher risk aversion—associated with women's "nervousness"—tends to be regarded as something *negative*. Greater risk aversion is associated with an inability to "rationally" play lottery experiments (in an expected utility sense); with inadequate retirement portfolios (Bernasek and Shwiff 2001; Arano, Parker et al. 2010, 147), with neuroticism and a lack of ambition (Borghans et al. 2009, 655); with an inability to advance in employment or entrepreneurship (Hartog et al. 2002, 24; Lindquist and Säve-Söderbergh 2011, 158; Booth and Nolen 2012, F56). Women are, in fact, encouraged to become more like men in their risk preferences, in order to succeed in "modern societies" (Eckel and Grossman 2002, 291).

Could the "finding" that women are more risk averse, however, be at least partly the result of world-splitting unconscious gender schema and stereotypes held by the researchers and/or the research subjects? The psychological phenomenon of

² Perhaps this discomfort explains why Camerer's question appears as the title of a link in a Google search, but the link now goes to a paper with a different and less provocative title (working paper version of Camerer 2005).

confirmation bias leads people to pay more attention to arguments and evidence that support what they already believe, and less to conflicting information. As human beings, academic researchers are not immune to influence by prior beliefs, including gender stereotypes. Nickerson's (1998) review of the confirmation bias literature, for example, provides numerous examples of this phenomenon affecting scientific fields. Another recent study found that the more one feels that one is an "objective, rational actor," the *more* likely one is to have confidence in one's stereotyped beliefs and act on them (Uhlmann and Cohen 2007). In regard to emotions, recent studies have noted that people often make attributions of emotions in gender-stereotyped ways, even when the portrayals of emotion are ambiguous (Plant et al. 2000; Johnson et al. 2011). Most emotions, including fear, are stereotypically associated with women; only pride and anger are more strongly associated with men (Plant et al. 2000, 83).

A number of scholars have pointed out flaws in the body of psychological and neurological research that claims to find strong (stereotyped) gender differences in psycho-social behavior (e.g., Hyde 2005; Fine 2010; Jordan-Young 2010), suggesting that such conclusions go well beyond what can actually be claimed based on empirical evidence. Investigating these issues in the context of economic studies regarding risk, Nelson (2014; Forthcoming) explains a number of weaknesses in the claim that "women are more risk averse than men." Statistical significance seems to have often been confused with substantive significance; there is evidence of publication bias; the fact of very considerable *intra-sex* variation seems to largely be overlooked; and stereotypes themselves may be an important source of measured "difference." Nelson (Forthcoming) reports that the most precise estimates of the difference between male and female mean risk preferences average out to only about a tenth of a standard deviation—hardly a bright line distinguishing the sexes! It seems that economists' attribution of greater emotionality and fear to women may be at least as much an outcome of an a priori belief in the "unmanliness" of a fear response to threats and opportunities, as the outcome of empirical study.

4 Fear of the feminine

The roots of the "fear of fear" in economics may be even older and more far-reaching than the analysis so far has suggested. A number of historians and philosophers of science (e.g., Easlea 1980; Keller 1985; Harding 1986; Plumwood 1993) have studied the strong binary gendering that underlies many images of science, both historically and in contemporary culture. They point out how binaries such as man/nature, mind/body, activity/passivity, order/chaos, separation/connection, and male/female strongly influenced the Western conception of the order of the world. From Plato and Aristotle, through Descartes and Bacon, the image of knowledge as the masculine means to firmly control a dangerous feminine Nature emerged. Since bodies are far more vulnerable, mortal, and messy than the pure Cartesian *cogito*, contemplation of the feminine-associated aspects of human life may create anxiety. Such aspects of life may therefore be avoided.

“The Cartesian ‘masculinization of thought,’” Susan Bordo has written, “is one intellectual ‘moment’ of an acute historical flight from the feminine, from the memory of union with the maternal world, and a rejection of all values associated with it” (Bordo 1987, 9). James Hillman has written, “The specific consciousness we call scientific, Western and modern is the long sharpened tool of the masculine mind that has discarded parts of its own substance, calling it ‘Eve,’ ‘female’ and ‘inferior’” (quoted in Bordo 1986, 441). The counterpoint to “rational man,” Elizabeth Fee has pointed out, is “woman [who] provides his connection with nature; she is the mediating force between man and nature, a reminder of his childhood, a reminder of the body, and a reminder of sexuality, passion, and human connectedness” (Fee 1983, 12).

Contemporary psychological research also sheds light on this issue. Male “gender role conflict” has been thought to arise from “socialized gender roles learned in sexist and patriarchal societies” (O’Neil 2008, 362) and be related to issues of control and power (361). It is said to result in a “fear of femininity” as well as “cognitive distortions” (O’Neil 2008, 362, 365). Kahan et al. (2007) have investigated intersections of sex, race, and cultural worldviews, and found that the largest differences in risk perception tend to be, not between men and women, but between white males who have hierarchical and individualist world views and most everyone else. While both the desire to, and the ability to, imagine oneself as separate from others and in control has been assumed to be universal in much liberal Western philosophy and economics (Meagher and Nelson 2004), these may be much more highly culture-specific traits than those literatures suggest.

To the extent that feeling, expressing, or even recognizing the existence of fear (except, perhaps, in women) is associated with inferiority and emasculation, while maintaining (the illusion of) control is highly prized, a “fear of the feminine” may be manifest within the discipline of economics both by a neglect of emotions and by a one-sided allegiance to methods that seem to promise clarity, elegance, and formal tractability. Adherence to strict mathematical logic, along with a position of cool abstraction and detachment has even come to be associated in many economists’ minds with the attainment of scientific objectivity (see discussions and references in Harding 1995; Nelson 1996).

Von Neumann and Morgenstern’s failure to incorporate the utility of chance in their influential axiomatization of expected utility theory, for example, might have had a different outcome, had economists been less fearful. A discipline more attuned to human behavior and the vagaries of life, and less in the thrall of mechanical formalism, might have judged their treatment of risk to be inadequate, and pursued richer formulations. Or the discipline could have put more effort into trying to incorporate time and emotions into formal economic models of risk.³ But the discipline as a whole instead went down the path of excluding (actual) emotions as inconsistent with the higher goal of (an envisioned) mathematical perfection. To do otherwise may have threatened the image economists hold of our discipline as a rigorous, physics-like science.

³ Pope (1985, 2001) proposes a formal solution involving epistemic periodization.

The idea that the *subjects* of economic analysis—human beings—may not be fully rational (in the sense of only using cool logic) also seems to have been perceived as potentially threatening. The abovementioned attempts of Friedman and Savage (1948) and Marschak (1950) to “rationalize” the study of risk appear to reflect the view that the emotions are not suitable as a serious topic of economic study. If emotions had been recognized as an obstacle to coolly rational utility maximization, the foundations for claiming that rational choice models have descriptive or predictive accuracy would have been eroded. Economists’ avoidance of experience and process was also manifested in the turn away from mental notions of utility towards more directly observable “revealed preference” (discussed in Pope 1985, 289) and a focus on consequences (Hammond 1988).

Only recently has a potential role for process and human embodied cognition been brought back into the study of economics, through the developing field of behavioral economics. Meanwhile, the notion of objectivity as guaranteed by a position of distance and detachment, assumed by an individual researcher at his or her lab bench or office desk, has been challenged by numerous philosophers of science (e.g., Keller 1985; Longino 1990; Sen 1992; Kitcher 2011). While mathematical rigor gives a model internal consistency, this is a very different thing from giving it validity in explaining real-world phenomena. A much more sensible notion of objectivity defines reliable knowledge as that which arises out of the perspectives of, and evaluations by, larger communities (e.g., Keller 1985; Longino 1990; Sen 1992; Kitcher 2011).⁴ Giving up the ideas that humans are (robotically) rational and that science is a matter of formalism and detachment, does not, then, mean giving up the hope of discovering reliable knowledge. In fact, it increases the probability of this occurring.

5 Problems and solutions

The association of fear with femininity may help explain why emotions of fear, though so important in real world phenomena such as financial panics, have remained under-regarded. To the extent that fear is deeply and unconsciously associated with the “feminine” realm, its presence and significance in realms such as masculine-associated markets and the masculine-associated economics discipline will tend to be automatically denied.

This creates problems.

Within the academic realm, the problem of bias rears its head: Phenomena such as fear may be dismissed merely because they do not fit our gender-schematic image of how the world works, even when they are important explanatory factors in explaining real-world economic events. The role of fear and hope in financial investing, as well as the roles of desire in consumer spending, of a spirit of adventure in entrepreneurship, of curiosity in technical innovation, of fellow-feeling

⁴ Sen, for example, emphasizes that knowledge claims by an individual are dependent on a personal position that should be acknowledged (rather than denied); these claims form the foundation for stronger forms of (“trans-positional”) objectivity arrived at through “discriminating aggregation” of positional views (Sen 1992, 4).

in creating stability and trustworthiness in economic institutions—all tend to be ironed out and glossed over, in a focus on mechanism and rational choice. Marshak's deeply confusing re-labeling of risklessness as risk has further served to hide from the discipline just *how* neglectful of actual risk and uncertainty it actually is.⁵

Even more importantly, however, “the economy” itself, along with the discipline of economics, has become culturally encoded as a “masculine” realm. When fear is denied, actions may be biased towards excessive risk-taking. Too little risk aversion, it has been noted in the psychology literature, may be associated with “unrealistic illusions of control” that “suppress the feelings of anxiety that might otherwise serve to warn of danger” (Ronay and Kim 2006, 413). The excessive financial risks taken on by large financial institutions in the years leading up to 2008 may be one example (Nelson 2013). A lack of urgency in dealing with the problem of climate change may be another (Nelson 2012). Of course, emotional dynamics often have a flip side: Fear, kept unexamined and dammed up for too long, may then be manifested in excess when a crisis finally arrives—e.g., in financial panic or in support of totalitarian means for restoring order.

Economic discourse might, presumably, be somewhat improved by bringing in discussion of the topic of fear while still maintaining a disciplinary allegiance to images of (mostly) rational “economic man,” a focus on choice behavior, and the (extremely questionable) notion that disciplinary objectivity is assured through a reliance on mathematical modeling. Considering the neglect of fear to be but one among a whole network of gendered, harmful biases, however, suggests that improvements could be more far-reaching. We could adopt a fuller and richer understanding of human behavior, as well as more comprehensive set of research methods. The resulting changes in economic discourse could make our discipline more helpful for addressing the threats and opportunities continually thrown up by our world—a world that is not, in fact, under our control.

References

- Arano K, Parker C et al (2010) Gender-based risk aversion and retirement asset allocation. *Econ Inq* 48(1):147–155
- Baron-Cohen S (2003) *The essential difference: the truth about the male and female brain*. Basic Books, NY
- Bem SL (1981) Gender schema theory: a cognitive account of sex typing. *Psychol Rev* 88(4):354–364
- Bernasek A, Shwiff S (2001) Gender, risk, and retirement. *J Econ Issues* 35(2):345–356
- Booth AL, Nolen P (2012) Gender differences in risk behaviour: does nurture matter? *Econ J* 122(558):F56–F78
- Bordo S (1986) The Cartesian masculinization of thought. *Signs J Women Cult Soc* 11(3):439–456
- Bordo S (1987) *The flight to objectivity*. State University of New York Press, Albany
- Borghans L, Golsteyn BHH et al (2009) Gender differences in risk aversion and ambiguity aversion. *J Eur Econ Assoc* 7(2–3):649–658
- Bruhin A, Fehr-Duda H et al (2010) Risk and rationality: uncovering heterogeneity in probability distortion. *Econometrica* 78(4):1375–1412

⁵ This neglect has recently been powerfully pointed out by Taleb (2010).

- Camerer C (2005) Three cheers—psychological, theoretical, empirical—for loss aversion. *J Mark Res* 42(2):129–133
- Carr PB, Steele CM (2010) Stereotype threat affects financial decision making. *Psychol Sci* 21:1411–1416
- Charness G, Gneezy U (2012) Strong evidence for gender differences in risk taking. *J Econ Behav Organ* 83(1):50–58
- Crosno R, Gneezy U (2009) Gender differences in preferences. *J Econ Lit* 47(2):448–474
- Damasio AR (1994) *Descartes' error: emotion, reason, and the human brain*. Putnam's Sons, New York
- Easley B (1980) Witch hunting, magic and the new philosophy: an introduction to debates of the scientific revolution, 1450-1750. Humanities Press, Atlantic Highlands
- Eckel CC, Grossman PJ (2002) Sex differences and statistical stereotyping in attitudes toward financial risk. *Evol Hum Behav* 23:281–295
- Eriksson K, Simpson B (2010) Emotional reactions to losing explain gender differences in entering a risky lottery. *Judgm Decis Mak* 5(3):159–163
- Fee E (1983) Women's nature and scientific objectivity. In: Lowe M, Hubbard R (eds) *Women's nature: rationalizations of inequality*. Pergamon Press, New York, pp 9–27
- Fehr-Duda H, De Gennaro M et al (2006) Gender, financial risk, and probability weights. *Theory Dec* 60:283–313
- Fine C (2010) *Delusions of gender: how our minds, society, and neurosexism create difference*. W. W Norton, NY
- Friedman M, Savage LJ (1948) The utility analysis of choices involving risk. *J Polit Econ* 56(4):279–304
- Google (2013) Google search for “Camerer risk aversion.” Retrieved Sept. 6, 2013
- Hammond PJ (1988) Consequentialist foundations for expected utility. *Theory Dec* 25(1):25–78
- Harding S (1986) *The science question in feminism*. Cornell University Press, Ithaca
- Harding S (1995) Can feminist thought make economics more objective? *Fem Econ* 1(1):7–32
- Hartog J, Ferrer-i-Carbonell A et al (2002) Linking measured risk aversion to individual characteristics. *Kyklos* 55(1):3–26
- Hyde JS (2005) The gender similarities hypothesis. *Am Psychol* 60(6):581–592
- Jennings AL (1993) Public or private? Institutional economics and feminism. In: Ferber MA, Nelson JA (eds) *Beyond economic man*. University of Chicago Press, Chicago, pp 111–129
- Johnson KL, McKay L et al (2011) Why “he throws like a girl” (but only when he's sad): emotion affects sex-decoding of biological motion displays. *Cognition* 119:265–280
- Jordan-Young RM (2010) *Brain storm: the flaws in the science of sex differences*. Harvard University Press, Cambridge
- Kahan DM, Braman D et al (2007) Culture and identity-protective cognition: explaining the white-male effect in risk perception. *J Empirical Legal Stud* 4(3):465–505
- Keller EF (1985) *Reflections on gender and science*. Yale University Press, New Haven
- Kitcher P (2011) *Science in a democratic society*. Prometheus Books, New York
- Knutson KM, Mah L et al (2007) Neural correlates of automatic beliefs about gender and race. *Hum Brain Mapp* 28:915–930
- Lindquist GS, Sävje-Söderbergh J (2011) “Girls will be girls”, especially among boys: risk-taking in the “daily double” on Jeopardy. *Econ Lett* 112(2):158–160
- Longino H (1990) *Science as social knowledge: values and objectivity in scientific inquiry*. Princeton University Press, Princeton
- Lopes LL (1987) Between hope and fear: the psychology of risk. In: Berkowitz L (ed) *Adv Exp Soc Psychol*. Academic Press, New York. 20:255–295
- Marschak J (1950) Rational behavior, uncertain prospects, and measurable utility. *Econometrica* 18(2):111–141
- McCloskey DN (1985) *The rhetoric of economics*. University of Wisconsin Press, Madison
- Meagher G, Nelson JA (2004) Survey article: feminism in the dismal science. *J Polit Philos* 12(1):102–126
- Most SB, Sorber AV et al (2007) Auditory Stroop reveals implicit gender associations in adults and children. *J Exp Soc Psychol* 43(2):287–294
- Nelson JA (1992) Gender, metaphor, and the definition of economics. *Econ Philos* 8:103–125
- Nelson JA (1996) *Feminism, objectivity and economics*. Routledge, London
- Nelson JA (2012) Is dismissing the precautionary principle the manly thing to do? Gender and the economics of climate change. *INET Research Note*

- Nelson JA (2013) Would women leaders have prevented the global financial crisis?' teaching critical thinking by questioning a question. *Int J Plur Econ Ed* 4(2):192–209
- Nelson JA (2014) Are women really more risk-averse than men? A re-analysis of the literature using expanded methods. *J Econ Surv*, doi:10.1111/joes.12069
- Nelson JA (Forthcoming) The power of stereotyping and confirmation bias to overwhelm accurate assessment: the case of economics, gender, and risk aversion. *J Econ Methodol*
- Nickerson RS (1998) Confirmation bias: a ubiquitous phenomenon in many guises. *Rev Gen Psychol* 2(2):175–220
- Nosek B, Banaji M et al. (2007). Gender-science IAT. <https://implicit.harvard.edu/implicit/>
- Novemsky N, Kahneman D (2005) The boundaries of loss aversion. *J Mark Res* 42(2):119–128
- Olsen RA, Cox CM (2001) The influence of gender on the perception and response to investment risk: the case of professional investors. *J Psychol Financ Mark* 2(1):29–36
- O'Neil JM (2008) Summarizing 25 years of research on men's gender role conflict using the gender role conflict scale: new research paradigms and clinical implications. *Couns Psychol* 36:358–445
- Plant EA, Hyde JS et al (2000) The gender stereotyping of emotions. *Psychol Women Q* 24(1):81–92
- Plumwood V (1993) *Feminism and the mastery of nature*. Routledge, London
- Pope R (1985) Timing contradictions in Von Neumann and Morenster's axioms and in Savage's 'sure thing' proof. *Theory Dec* 18(3):229–261
- Pope RE (2001) Debates on the utility of risk: a look back to move forward. In: Götschl J (ed) *Evolution and progress in democracies: towards a new foundation of a knowledge society*. Kluwer Academic Publishers, Dordrecht, pp 273–315
- Ronay R, Kim DY (2006) Gender differences in explicit and implicit risk attitudes: a socially facilitated phenomenon. *Brit J Soc Psychol* 45(2):397–419
- Sen A (1992) *Objectivity and position*, The Lindley Lecture. University of Kansas, Kansas
- Sokol-Hessner P, Camerer CF et al (2013) Emotion regulation reduces loss aversion and decreases amygdala responses to losses. *Soc Cogn Affect Neurosci* 8:341–350
- Taleb NN (2010) *The Black Swan: the impact of the highly improbable*. Random House, NY
- Uhlmann EL, Cohen GL (2007) "I think it, therefore it's true": effects of self-perceived objectivity on hiring discrimination. *Organ Behav Hum Dec* 104:207–223