

This manuscript has been accepted for publication as follows: Tybur, J. & Navarrete, C.D. (in press). Interrupting bias in social psychology: Evolutionary psychology as a guide. In Forgas, J., & Jessum, L., Eds., *Frontiers in Social Psychology Series: The Politics of Social Psychology*, Psychology Press: NY.

Please do not cite or quote without permission.

Interrupting Bias in Psychological Science:

Evolutionary Psychology as a Guide

Joshua M. Tybur

Department of Experimental and Applied Psychology

VU Amsterdam

C. David Navarrete

Department of Psychology

and

Ecology, Evolutionary Biology and Behavior Program

Michigan State University

Interrupting Bias in Psychological Science:
Evolutionary Psychology as a Guide

Why does our understanding of social psychological phenomena such as why we have a moral sense, why we love some people yet hate others, and why cooperate with others even when it's not obviously in our self-interest pale in comparison to the precision with which we understand cellular division, plate tectonics, and semiconductors? It's not for a lack of effort, since thousands of social psychologists furiously work on better understanding these topics. It's probably not for lack of talent, since professional researchers must pass through several filters on their way from bachelor degree to Ph.D. to faculty position. Instead, progress is handicapped by a cold, hard fact: as far as sciences go, social psychology is as soft as a marshmallow. Our areas of inquiry are often grouped into folk categories (e.g., prejudice, morality, self-control) that may imperfectly carve nature at its joints. The phenomena we study are nebulous enough that we feel compelled to posit the existence of hypothetical, unobservable constructs that must be indirectly observed via idiosyncratic measures, which are readily compromised by unreliability or by fallacious interpretations of the constructs we're actually measuring (e.g., jingle and jangle fallacies; Uher, 2011). As such, the lack of set criteria for measurement and methodology introduces "researcher" degrees of freedom, which can lead the field down a bumpy detour of false positive findings. In addition, researchers working in different subfields of social psychology use different theoretical frameworks, many of which are so disconnected from each other that progress made in one sub-discipline scarcely informs knowledge in another.

This type of gloomy assessment of psychology isn't novel. Indeed, Paul Meehl's (1978) blistering treatise on the slow progress of soft psychology is required reading in many undergraduate and graduate courses in psychology, just as it's been for decades, and Meehl himself noted that many of his criticisms had already appeared in various critiques prior to 1978. And, although similar sentiments have been repeated in various forms through the years (Krueger & Funder, 2004; Pinker, 2015; Tooby & Cosmides, 1992), the field has recently progressed in addressing some of the more problematic aspects of its softness. High profile critiques of common research practices (Schimmick, 2012; Simmons et al., 2011)

have tapped into the researchers' indignation following prominent scientific fraud cases (e.g., those linked to Diederik Stapel and Dirk Smeesters) and journals and societies have adopted new standards that will hopefully toughen up some of our soft contours.

Yet just as some leaks are being patched up, a major rift has been discovered that has been hiding in plain sight for decades, and with demonstrated pitfalls for our field: political bias (Duarte, Crawford, Stern, Haidt, Jussim, & Tetlock, 2015). It turns out that social psychologists are not just politically liberal—we are extremely, overwhelmingly, and shamelessly liberal. We are so dogmatically liberal that many of us admit to being willing to discriminate against political conservatives in professional contexts (Inbar & Lammers, 2012). Given the soft contours of social psychology, systematic ideological biases might mold our measurement instruments, our hypotheses, and our interpretations in a manner tailored to support our political ideologies rather than clarify scientific puzzles (Duarte et al., 2015; Tetlock, 1998; 2007).

While *p* curve analyses, Bayesian statistics, minimal standards for statistical power, meta-analyses, preregistration, and replication projects might address a subset of the challenges to social psychology, they are weaker medicines for addressing ideological biases at the foundations of research questions social psychologists seek to address. So what type of strategy might we use to minimize our political biases? Some scientists have suggested that we try to recruit more political conservatives into graduate programs or as our institutional colleagues—perhaps through affirmative action type systems—so that they can gently remind us when our research reflects political goals rather than scientific one (Duarte et al., 2015). We are skeptical of this approach (Tybur & Navarrete, 2015; see also Funder 2015; Pfister & Gisela Böhm, 2015), both because of barriers to its implementation, and because it appears better suited for nursing an illness's symptoms rather than addressing its epidemiological roots. Instead, we believe that the best way to neutralize political bias is to address a superficially unrelated critique offered by Meehl (1978) – by shoring up the softness in our theoretical foundations. And we believe that evolutionary psychologists can serve as an example for how successful attention to theory can attenuate political biases in research. To understand the contribution that evolutionary psychology can make to

neutralize political bias, let's first consider evolutionary psychology's history and struggles with politics in science.

Evolution and human behavior

At the end of *On the Origin of Species*, Darwin (1859) suggested that his ideas of evolution by natural selection might one day form the foundation of psychological science. In its nascent state, though, Darwin's theory of evolution was not quite solid enough to support psychology; an evolutionary foundation for the psychological sciences required critical theoretical developments beyond those that Darwin could offer. This foundation were later built upon the insights of the Modern Evolutionary Synthesis (the integration of Darwinian evolution with Mendelian genetics), which can rightfully be referred to as a revolution in evolutionary behavioral science in its own right (Dawkins, 1976; Wilson, 1975). The Modern Synthesis led to a gene-centered view of the evolution of behavior, and it led to, among others, W.D. Hamilton's (1964) inclusive fitness theory and Robert Trivers's theories of reciprocal altruism (1971) and parental investment (1972), each of which organized the types of questions that evolutionary oriented behavioral scientists could ask, and each of which provided examples of the types of cost-benefit analyses that can guide the evolution of functional organization. The identification of functional design as the most important criteria for identifying adaptations (Williams, 1966) provided scientists with a rough guide for detecting the signatures of natural selection in behavior, and the application of game theory to the costs and benefits of behavioral strategies shored up the underpinnings of this approach as a serious and rigorous enterprise (Maynard Smith & Price, 1973; Axelrod & Hamilton, 1981; Maynard Smith, 1982). These—and many other developments spurred by the modern synthesis—were summarized by E.O. Wilson in *Sociobiology: The New Synthesis* (1975), which described how evolutionary theory could be used to understand behavioral phenomena such as aggression, status hierarchies, parenting, and cooperation. The book was wildly successful—in 1989, the Animal Behavior Society voted it as the most important book on animal behavior ever published, and the ideas described in it now form the foundation of the field of animal behavior (Alcock, 2001).

Although most of *Sociobiology* was dedicated to understanding non-human behavior, Wilson's final chapter applied the same theoretical principles used to understand insects, birds, ungulates, and non-human primates to understanding humans. It aimed to connect insights from evolutionary theorists with those from sociologists, such as Erving Goffman, and cultural anthropologists, such as Claude Lévi-Strauss. Wilson's short, 28-page evolutionary analysis of human behavior hinted at what would soon come from other scientists.

Following *Sociobiology*, several researchers went into greater depth in applying modern evolutionary theory to understanding human behavior. Don Symons's *The Evolution of Human Sexuality* (1979) and Martin Daly and Margo Wilson's *Sex, Evolution, and Behavior* (1978) laid the groundwork for much contemporary evolutionary research on mating. Daly and Wilson's *Homicide* (1988) articulated who should be expected to be the perpetrators and targets of aggression, and when and why people should aggress. David Buss's (1989) landmark cross-cultural test of mate preferences tested some of the key predictions about mate preferences that could be generated using Trivers' Parental Investment Theory. And, perhaps most critically, John Tooby and Leda Cosmides offered a framework for understanding how proximate, cognitive mechanisms should be functionally organized to execute ultimate, evolutionary functions (Cosmides & Tooby, 1992, 1994; Tooby & Cosmides, 1990, 1992, 2005).

Whereas the theoretical insights described by E.O. Wilson (1975) now form the foundation of modern animal behavior research (Alcock, 2001), the approach offered by Tooby and Cosmides (or variations thereof; cf. Laland & Brown, 2011), while generative and accelerating in application, does not enjoy the same degree of success in mainstream research on aggression, morality, prejudice, cooperation, and other topics of interest to social psychologists. Why have researchers who study social behavior in humans been so much slower to adopt evolutionary theory than researchers who study social behavior in non-human animals? The reason lies partially in the ideology of scientific practitioners.

Early resistance to evolution and human behavior from the left

Shortly after *Sociobiology* was published, 16 members of the so-called Sociobiology Study Group (some of them Wilson's Harvard colleagues, most of them self-described Marxists) published a letter,

Against Sociobiology (Allen et al., 1975), in the *New York Review of Books*. The letter primarily targeted Wilson's final chapter on human behavior, which focused on, among other things, the relatively uncontroversial notions that (1) humans have remarkably large craniums compared to non-human primates, (2) humans engage in social exchange, which might facilitate status hierarchies, (3) human kinship systems are zoologically unique, (4) human language is rich and sophisticated compared to other animal communication systems, (5) tribalism and ethnocentrism appear to be common across human groups, and (6) humans behavior is highly variable across societies, and cultures seem to evolve faster than do biological organisms. Harvard paleontologist Stephen Jay Gould, Harvard geneticist Richard Lewontin, and their letter co-authors responded to such ideas by implying that Wilson, in his final chapter of *Sociobiology*, had situated himself as the intellectual heir to Nazi sympathizer Konrad Lorenz and Social Darwinist Herbert Spencer. They wrote that Wilson's work was in step with "the eugenics policies which led to the establishment of gas chambers in Nazi Germany," and that "Wilson joins the long parade of biological determinists whose work has served to buttress the institutions of their society by exonerating them from responsibility for social problems." Whereas the application of evolutionary principles to non-human animals transformed the study of animal behavior and won Wilson accolades, theoretically similar analyses of human behavior earned immediate scorn and condemnation, mostly from liberal political activists. Protesters picketed outside of Wilson's office and interrupted his lectures at Harvard. Most famously, at a public lecture at the American Association for the Advancement of Science, just two months after being awarded a National Medal of Science by U.S. President Jimmy Carter, he was assaulted by a group of left-wing activists, who seized the stage and dumped a pitcher of ice water on his head. Wilson later expressed bewilderment at the political reaction to *Sociobiology*: "Having expected some frontal fire from social scientists primarily on evidential grounds, I had received instead a political enfilade from the flank" (Wilson, 2006, pg. 338).

Protests against *Sociobiology* were largely unconcerned with Wilson's scientific accuracy. Instead, they focused on the degree to which Wilson's chapter on humans was superficially consistent with liberal political ideologies (Seegerstrale, 2000). The most vocal critics of *Sociobiology* wanted any

theoretical frameworks or testable hypotheses that sat uneasily with their ideologies silenced, and they wanted researchers whose science was seemingly inconsistent with liberal politics banished from academia. To many of Wilson's critics, any type of evolutionary analysis of human behavior was political activism disguised as science; it was a thinly veiled attempt to justify economic inequality, sexism, and racism as the inevitable outcome of evolutionary processes.

That said, many of Wilson's critics did not actually believe that Wilson and others who dared to apply evolutionary theory to human behavior were politically conservative. Instead, such critics objected to the idea that some evolutionary scientists weren't *liberal enough*—or at least they weren't sufficiently radical to steer their science in a direction that was clearly consistent with a liberal ideology, even if such a direction did not follow the flow of scientific progress (Seegerstrale, 2000). Further, some believed that right-wing groups and politicians could seize upon sociobiology as scientific justification for enacting policies that discriminate against minority groups and inhibit social mobility. Of course, other critics did assume—and continue to assume—that evolutionary scientists like Wilson are conservative ideologues promoting evolutionary theory to support a nefarious right-wing political agenda. For example, Anne Innis Dagg (2005) wrote, “Darwinian psychologists seem to have a right wing bias,” (pg. 187) and she questioned whether the evolutionary behavioral sciences are “truly scientific if (they) so readily reflect political rather than academic precepts” (pg. ix). Similarly, Hilary and Steven Rose (2000) wrote, “The political agenda of evolutionary psychology is transparently part of a right-wing libertarian attack on collectivity, above all the welfare state” (pg. 8). It is unclear whether such examples reflect Dagg's and Rose's and Rose's true beliefs about evolutionary behavioral scientists, or if they are strategic attacks designed to stigmatize their targets regardless of the veracity of their statements. Either way, how accurately did Wilson's critics, protesters, and accosters describe his political agenda? How accurate were critics like Dagg, Rose and Rose? As it turns out: not at all.

Political evolutionary scientists

Wilson later described having walked into a political arena for which he was wholly unprepared: “In 1975, I was a political naïf: I knew almost nothing of Marxism as either a political belief or a mode of

analysis, I had paid little attention to the dynamism of the activist left, I had never heard of Science for the People” (Wilson, 2006, pg. 339). In sharp contrast with his self-described Marxist Harvard colleagues Stephen Jay Gould and Richard Lewontin, Wilson eschewed politics in favor of studying insects—primarily ants—and his primary goal was to understand whether and how a common theoretical perspective could explain the behavior of animals across taxa. As Richard Dawkins (2009) later put it, evolution was and remains “the only game in town,” and *Sociobiology* was the output years of research into a general theoretical framework for understanding the evolution of animal behavior. Wilson had little familiarity with political debates, and he had no desire or expectation for *Sociobiology* to inform or support anyone’s personal ideology. If forced into a political coalition, he would have fit much more comfortably with liberal rather than conservative groups. In addition to his contributions to evolutionary biology, he coined the term “biodiversity,” is a secular humanist, and is an influential environmental conservationist.

At least one of Wilson’s contemporaries expressed surprise at Wilson’s political naiveté. John Maynard Smith remarked, “I cannot believe Wilson didn’t know that (*Sociobiology*) was going to provoke great hostility from American Marxists, and Marxists everywhere” (Wilson, 2006). Maynard Smith certainly had some insight into the minds of Marxists. He, one of the 20th century’s most heavily cited and influential evolutionary biologists, was far from the type of right-wing ideologue that critiques of evolutionary theory pictured. Indeed, he had been a member of the Communist party, and he only left the party after the USSR began brutalizing Eastern Europe. Maynard Smith’s left-wing credentials were outdone by another titan of the early days of sociobiology. Robert Trivers, who, shortly after developing parental investment theory, the theory of reciprocal altruism, and parent offspring conflict theory, joined the far left Black Panther Party, became a close friend of Black Panther founder Huey P. Newton, and described himself as a political radical. If forced to pick three “founders” of sociobiology, one could reasonably select Wilson, Maynard Smith, and Trivers. Far from being covert agents of the political right, these three ranged from left-of-center to perhaps far left-of-center in their personal lives, and their political profiles should have swiftly neutered any accusations of conservative political biases in their

science. Even so, hundreds of researchers later adopted evolutionary perspectives to study human behavior. What about those who adopted some of the core principles summarized by Wilson to study topics traditionally under the purview of social psychologists—what about the politics of contemporary evolutionary psychologists?

Evolutionary psychologists' political attitudes

Evolutionary psychology differs from sociobiology in many ways (Tooby & Cosmides, 2005), but it carries much of sociobiology's political baggage. Books have been published outlining evolutionary psychologists' purported political sins (i.e., political conservatism). The blogosphere is rife with criticisms of evolutionary psychologists' ideological motivations, such as Jezebel.com blogger Lindy West's statement, "I don't want to hate evolutionary psychology, but I do. I hate it. It's a field of study that could be legitimately interesting, if it weren't constantly being twisted into a justification for backward (and, frankly, un-evolved) anti-feminist bullshit." And most evolutionary psychologists can recall comments from departmental colleagues, conference talk audiences, or anonymous article reviewers expressing concerns over the political motivations and implications of their work. In a review process at *JPSP* in the 1980's, one evolutionary psychologist received the following comment from a reviewer: "As a feminist and a scholar, I feel duty-bound to protect the unwary journal readership from this type of inherently sexist scholarship" (anonymous, personal communication).

Our personal observations contrast sharply with both published and whispered suggestions that evolutionary psychology research is motivated by conservative principles. The evolutionary psychologists we know seem just as likely as non-evolutionary social psychologists to support political policies that reduce institutional biases against groups (e.g., allowing homosexuals to marry; reducing or eliminating the War on Drugs, which disparately impacts ethnic minorities), show antipathy toward conservative politicians, and, in the U.S., attend political rallies for Democratic political candidates.

Survey data corroborate our personal observations. Much as was the case with sociobiology, stereotypes that evolutionary psychologists are politically conservative are based more in fantasy than reality. Consider a 2005 survey of 168 Ph.D. students across six U.S. psychology departments (Tybur et

al., 2007). After reporting their stances on a number of political issues and their political party affiliation, participants selected which of six perspectives (one of which was evolutionary) best described the theory they used to guide their research. Results suggested that young evolutionary psychologists were just as liberal as their non-evolutionary colleagues. Only two of the 31 evolutionary psychologists (6.5%) – compared with 21 out of the 137 non-evolutionary psychologists (18.1%) – identified as Republican or Libertarian. None of the 31 evolutionary psychologists – compared with 12 of the 137 non-evolutionary psychologists – preferred George W. Bush in the 2004 Presidential election. Evolutionary and non-evolutionary psychologists did not differ on a composite of items measuring political compassion (e.g., endorsement of government funded health care; endorsement of raising the minimum wage) or wealth redistribution (e.g., endorsement of privatizing social security and implementing a flat tax), and evolutionary psychologists actually scored more liberally on issues related to individual rights (e.g., marriage equality, abortion rights). The overwhelming liberalness of evolutionary psychologists is mirrored by overwhelming liberalness of evolutionary anthropologists, who have also been critiqued as using science to justify a pernicious conservative political agenda (Lyle III & Smith, 2012).

The fact that evolutionary psychologists are actually similarly liberal as non-evolutionary psychologists offers some hope for social psychologists concerned with contaminating effects of their own liberal biases. After all, if evolutionary psychology research is so divorced from liberal advocacy that it is sometimes mistaken as reflecting a conservative political agenda, then evolutionary psychologists are doing a pretty good job of attenuating personal political influence on their research. So how do evolutionary psychologists accomplish this? How do they separate their personally liberal politics from their research? Their views on science might provide some clues. Although evolutionary and non-evolutionary psychologists held similar political views, Tybur et al. (2007) found that they viewed science differently. Evolutionary psychologists more strongly endorsed a composite of items measuring appreciation of “strong science” (example items including “We must use strong scientific methods to truly understand social problems like racism, sexism, and sexual assault” and “Science is the best tool for understanding how the world works”), and they less strongly endorsed a composite of items measuring

skepticism toward scientists' ideological motives (example items including "Science is often used as an excuse to support the status quo" and "Many academic papers reflect how the author wishes the world was rather than how it actually is"). Differences between evolutionary and non-evolutionary psychologists in orientations toward science could reflect self-selection, with students who are more invested in strong science finding an evolutionary framework more appealing, and students who are less prone to conflating scientific theories with researcher ideologies finding evolutionary approaches to studying human behavior less objectionable. Or they could reflect the kind of training that evolutionary psychology Ph.D. students receive, with more of an emphasis on cumulative scientific progress across a number of disciplines (e.g., anthropology, biology, ethology).

Regardless of their source, these differences offer an explanation for why liberal evolutionary psychologists entertain and test many hypotheses that are inconsistent with liberal political intuitions. That explanation lies in the potential protective effect of a strong theoretical framework for guarding against ideological biases.

Strong theory as a buffer between ideology and science

Relative to, say, geologists, social psychologists face a challenging task: they often aim to scientifically understand topics for which they have ideological opinions in their personal lives. Whereas a geologist's political ideology has little to say about which epoch a rock layer is dated as, a social psychologist's political ideology might scream out opinions regarding topics ranging from the nature of sex differences to the nature of the differences between liberals and conservatives, independent of any data or theory based hypothesis. Further, even if a geologist has moral intuitions regarding the age of a rock, the ability for these intuitions to shape methods or results would be shackled by the dispassionate links between geology and chemistry (e.g., radiometric dating). Many social psychological methods and theory are untethered from other disciplines, and the lack of cross-scientific verification can give researchers more degrees of freedom to unwittingly introduce ideological biases into their research. Evolutionary psychologists are comparatively unburdened by such ideological degrees of freedom – when well formulated, their hypotheses are firmly rooted in evolutionary theory, and as such are directly or

indirectly connected to (and do not easily violate knowledge gleaned from) molecular genetics, quantitative genetics, ethology, parasitology, and evolutionary game theory, among other disciplines. Hence, even if an individual evolutionary psychologist has strong moral intuitions regarding, say, how men and women should be treated, these intuitions can be readily divorced from the dispassionate predictions regarding sex differences in mate preferences, coalitional psychology, and aggression implied by evolutionary theory.

Strong theory, then, might be especially important in fields that are vulnerable to investigators' ideological intuitions. While social psychologists have been quite successful in designing experiments, introducing cognitive processes to the study of behavior, and identifying widespread cognitive biases, they have been less successful in developing theories that connect social psychological phenomena with other disciplines (and, indeed, even other phenomena within social psychology). Many of those theories that have been generated within social psychology have been critiqued as merely restating the phenomena that the theory aims to explain (Pinker, 2015). Other theories end at points unconnected with other scientific disciplines. Social Identity Theory, for example, explains intergroup bias as stemming from a basic need to see oneself in a positive light and as a member of a distinct social group. The theory hits a wall in explaining why humans would have a need to see themselves in a positive light, and it thus is unable to be informed by or verified by theories in other sciences. Many of the theories generated within social psychology end at a similar point – an assumption that humans have a basic need for self-esteem, a need for belonging, a need for consistency, or a need for order, without an explanation for why such a need or drive would exist. Further, many of the core assumptions within such theories are inconsistent with data regarding the nature of the self, with consequences of self-esteem, or with evidence of more nuanced fundamental psychological motives (Kenrick et al., 2010; Kurzban & Aktipis, 2007; Leary, 1999; Leary & Baumeister, 2000). If the strength of a theory informs its ability to buffer a researcher's ideology, then even social psychological research explicitly guided by theory can be vulnerable to ideological bias.

Whither non-evolutionary psychology?

Let's assume that the best way to attenuate ideological bias is to shore up social psychology's theoretical foundations. To do this, would we need all social psychologists to become evolutionary psychologists? We are unable to think of a theory outside of evolutionary theory that (a) has led such an overwhelmingly liberal group of scholars (evolutionary psychologists) to conduct research on human behavior without clearly liberal biases, (b) can be used to draw predictions and interpret data across the jungle of phenomena investigated by social psychologists (e.g., aggression, mating, cooperation), and (c) can link social psychology to other disciplines, such as ethology, anthropology, and biology. That said, a strategy aimed at convincing all social psychologists to suddenly become "evolutionary psychologists" might be less plausible than an affirmative action program designed to get conservatives to join the ranks of social psychology departments. Why is this? At first glance, an evolutionary perspective shouldn't be a hard sell for social psychologists, most of who would accept the core tenants of modern evolutionary theory as fact, would accept that humans sit perched on one twig on the tree of life, and would accept that the human brain is an organ that has been shaped by natural selection. A closer look reveals at least four barriers that social psychologists face in adopting evolutionary theory. First, many undergraduate and graduate psychology programs do not provide any training in evolutionary theory, and textbooks are rampant with factual errors concerning basic evolutionary principles (Park, 2007; Winegard, Winegard, & Deaner, 2012). Second, non-evolutionary psychologists sometimes mistakenly believe that evolutionary theory is inherently untestable or is unable to generate falsifiable hypotheses (Conway & Schaller, 2002; Ketelaar & Ellis, 2000). Third, people easily adopt the naturalistic fallacy – the belief that something that *is* informs what *ought* to be (or, put differently, the existence of something like sex differences implies that the sexes should be treated differently in all domains). Fourth, evolutionary psychologists can appear to be a rival coalition with a different ideology (a phantom conservative ideology) competing for journal space, grant funding, and Ph.D. student, and, as should be especially clear to social psychologists, humans tend to view rival coalitions negatively.

These barriers might prevent social psychologists from joining the Human Behavior and Evolution Society *en masse*, but they need not prevent social psychologists from taking advantage of the

ideology buffering effects of evolutionary theory. Indeed, we feel that four simple changes to social psychologists' orientations and training programs—changes inspired by the barriers that we propose inhibit the adoption of evolutionary theory by social psychologists—could contribute to attenuating ideological bias within the field.

Change 1: Increase education in biology and anthropology

Many of the behaviors investigated by social psychologists have analogues (or homologues) in other animals¹. Chimpanzees engage in coalitional aggression. Several social species have dominance hierarchies. Still other species engage in coercive mating behaviors (Thornhill & Palmer, 2001). The mating systems of many bird species are characterized by monogamy and paternal investment systems similar to those in humans. Indeed, the theories used by ornithologists in understanding the dynamics of bird mating might be especially useful in understanding topics pertaining to human mating and parenting, including courtship, mate guarding, extra-pair sex, and paternal investment (Thornhill & Gangestad, 2008). Further, careful reads of the anthropological literature often challenge lay assumptions about the nature of human nature, especially in terms of mating, parenting, and aggression (Pinker, 2002, 2011; Sear, 2016). Given the thoroughly Western contexts through which most social psychological research and training occur, greater exposure to research on human culture and behavior in other contexts could greatly enrich social psychological research programs (Henrich, Heine, & Norenzayan, 2010).

Of course, some of the conditions in the environments of evolutionary adaptedness (EEA; see Tooby & Cosmides, 1990) differ for human and non-human traits, and a thorough understanding of bird behavior will not alone provide a thorough understanding of human behavior. Nevertheless, adding coursework in animal behavior and anthropology (and, specifically, behavioral ecology) can benefit the next generation of social psychologists by providing them with some background in the evolutionary theories used to explain behavior across species. Students might end their evolutionary education there, without further exposure to work conducted by evolutionary psychologists. Even so, that little exposure to

¹ Homologues refer to traits that organisms share via a common ancestor, whereas analogues refer to traits that have a similar function, but that evolved separately in different lineages.

evolutionary perspectives on behavior might provide the next generation of researchers will have some background in theory that might suggest hypotheses intuitively inconsistent with the personally liberal politics that most students in such programs possess. Further, such coursework could provide researchers with models for formulating and testing hypotheses derived from evolutionary theory. Many of our “non-evolutionary” colleagues hesitate to familiarize themselves with evolutionary theory based on the idea that evolutionary hypotheses are less testable than non-evolutionary hypotheses. Exposure to the ubiquitous testing of evolutionary hypotheses across other disciplines could demonstrate the usefulness of evolutionary theory, which is one of the best hypotheses generating machines in the history of science (Dawkins, 2009).

Nevertheless, even with a background in evolutionary theory, and even with examples of testable and generative evolutionary hypotheses, future social psychologists might shy away from applying evolutionary theory to their research if they fall prey to the pernicious naturalistic fallacy. Hence, we suggest some specialized training on recognizing and avoiding this pitfall.

Change 2: Increase familiarity with the naturalistic fallacy

Virologists can study some pretty nasty stuff, from diseases that kill children to those that cripple adults. These scientists are generally not accused of tacitly endorsing child murder by studying viruses, though – few people would infer, for example, that someone studying the evolution of HIV has a pro-HIV agenda or is trying to justify the existence of HIV. When the topic of study concerns more morally valenced topics (e.g., prejudice, sexual coercion), though, people – even trained academics – more easily lapse into the naturalistic fallacy and assume that hypotheses drawn from evolutionary theory would justify the existence of the phenomenon being investigated. Such assumptions can cut scientific inquiry off at the knees, and they can lead investigators interested in morally charged topics to consider only hypotheses that superficially coincide with their own moral stances. Training young researchers about the naturalistic fallacy (the mistake of deriving “ought” from “is”) and its potentially corrupting influence on scientific investigations can open up an array of social psychological hypotheses and tests that might otherwise be ignored based on ideological reasons.

Consider Darwin's description of how his waning faith in God was shattered when he learned of the Ichneumonidae, a parasitic wasp whose reproductive cycle involves injecting a host insect's body with eggs, which later hatch and eat the host body from the inside. The behavior of Ichneumonidae was nothing that could have been predicted from Darwin's religious education – indeed, the creature's mere existence seemed at odds with the idea of a beneficent Lord. But entomologists are able to understand the Ichneumonidae using a gene-centric view of evolution; their scientific understanding can easily be compartmentalized from personal feelings regarding the parasite's cruelty. Social psychologists could be trained to better use the theoretical tool kit that dominates scientists' understanding of non-human animal behavior while compartmentalizing their own personal feelings about the phenomena they study. Our future understanding of behaviors that few liberals endorse (e.g., sexual coercion, infidelity, murder, bullying) can be enriched if the next generation of students is trained to understand that drawing from evolutionary theory to explain a behavior need not imply endorsing or justifying that behavior. In this sense, it's critical we stay mindful of the potential for conflating our explanations of the “facts” from our “values.”

Whereas basic coursework in animal behavior and anthropology (Proposed Change #1) would need to be outsourced to departments with expertise in these areas, training in the naturalistic fallacy could be included in any introductory psychology graduate seminar. Teaching students that scientific hypotheses should not be conflated with moral stances might encourage them to better consider naturalistic explanations, either evolutionary, genetic, or even purely psychological—which might in turn encourage generating and testing useful hypotheses that would otherwise be rejected due to ideological biases.

Change 3: Link sub-theories back to evolutionary theory

Again, if we start with the relatively uncontroversial premises that (1) evolutionary processes have shaped all life on earth, including humans, (2) human brains, like all other organs, have a structure that has been molded by natural selection, and (3) all social behavior result processes embedded within the brain, then theories in social psychology should ultimately be compatible with evolutionary theory,

even if they are not explicitly referenced as “evolutionary” theories. Consider Terror Management Theory (TMT) as an example. Although TMT was not initially developed as an evolutionary theory, some researchers have proposed grounding TMT in evolutionary theory. The evolutionary account goes as such: in humans, a “survival instinct” – an evolved motivational system that causes all organisms to seek to avoid their own deaths – produced a gargantuan suite of psychological mechanisms functioning to buffer against the putatively debilitating anxiety that accompanies human recognition of mortality (Pyszczynski et al., 1997). This type of exercise – specifying the evolved functions of the psychological processes proposed by the theoretical perspective – can be useful for many social psychological theories; it can allow for a kind of theoretical cross-checking with the state of the art in evolutionary psychology. In the case of TMT, there are principled grounds on which to doubt key aspects of the theory, specifically the idea that natural selection has shaped a “survival instinct” in any species, our own included. Evolutionary psychology has long demonstrated that thoughts and feelings are best conceptualized as emerging from computational system designed “for” solving discrete problems (Tooby & Cosmides, 1992). An “avoiding death” imperative could result in any practical guidance for adaptive behavior (Paulhus & Trapnell, 1997); it offers no content for psychological mechanisms, e.g., what stimuli to respond to in avoiding death, and how to respond to such stimuli (Navarrete & Fessler, 2005). Organisms do not safely navigate through complex environments because a single “orientation for death-avoidance behavior” is programmed into their nervous systems. Instead, they have myriad modular mechanisms for navigating through myriad distinct life-threatening situations, each of which threatens life in a different way. Whereas avoiding falling off cliffs (Gibson & Walk, 1960) or avoiding aerial predators (Lang et al., 2000) are tasks that natural selection can design psychological mechanisms to solve (e.g., those that output fear of heights or freezing in response to aerial shadows, respectively), avoiding death, per se, is not. Thus, general motives (e.g., “survive”) that can seem self-evident from folk perspectives are likely emergent property of a collection of discrete mechanisms, each designed to neutralize particular kinds of dangers (Holbrook, 2016).

Applying this type of exercise to other theories in social psychology could have two beneficial effects. First, theories can be refined and improved upon (and such improvements should be a goal of a progressing science of social psychology). Second, theories colored by ideological biases would perform poorly when inspected under the light of an apolitical evolutionary analysis.

Change 4: Resolve coalitional issues

Many social psychologists who likely do not identify as evolutionary psychologists actively propose evolutionary hypotheses, including the above-mentioned account of TMT (Pyszczynski et al., 1997), Conley's (2011) Pleasure Theory, and Eagly and colleagues (2000) Social Role Theory, or they assume some evolved function of the mind, even if that function is largely out of step with basic adaptationist principles (e.g., Kanazawa, 2010; cf. Penke et al., 2010). Others rely upon evolutionary theories of cooperation (e.g., indirect reciprocity; see Van Lange et al., 2014). Nevertheless, we suspect that many social psychologists that might otherwise be open to using evolutionary theory in their research would bristle at the thought of being labeled as an "evolutionary psychologist." Part of this coalitional resistance likely stems from the naturalistic fallacy and implicit assumptions that evolutionary psychologists endorse some of the phenomena they study (e.g., social dominance, sexual coercion, physical formidability, etc.) and are therefore tools for maintaining the status quo. Assumptions that naturalistic explanations of human behavior are indicative researchers' political prejudices might lead many liberal social psychologists to perceive evolutionary psychologists as members of rival political coalitions.

Research has long shown that political partisans resist persuasion from information perceived as supporting rival coalitions and more readily accept evidence perceived as supporting the policies advocated by of their own political group (e.g. Tetlock, 1999). This pitfall is sometimes referred to as the moralistic fallacy—the tendency to deny the validity of propositions perceived as having implications inconsistent with one's moral matrix (the mistake of deriving "is" from "ought."). Such pitfalls are problematic in their own right, but they might be especially problematic for liberals with high cognitive ability – exactly the demographic that characterizes social psychologists. In a study of political partisans

at Yale, Dan Kahan (2013) found that participants who scored highest in cognitive ability and thoughtfulness were the most likely to display ideologically motivated cognition by doubting the validity of facts inconsistent with their worldview. In stark contrast with the popular notion that thoughtful, deliberative reasoning is a bulwark against error, Kahan's results suggest that ideologically motivated reasoning serves to promote individuals' interests in forming and maintaining beliefs signifying their loyalty to important affinity groups. Such group signaling interpretations of political conflict are consistent with "moral warfare" literature (Boyd & Richerson, 1985; Tooby & Cosmides, 2010), and they further underscore the importance of developing scientific practices that allows otherwise thoughtful, intelligent liberals to divorce themselves from factors that turn naturalistic explanations of behavior into divisive symbols of social identity and coalitional competition.

Concluding thoughts

As social psychologists, we face challenges unique from those encountered by physicists, chemists, and geologists. Relative to practitioners of other sciences, we study phenomena that are hard to measure, hard to predict, and hard to understand, and our field is thus ignominiously referred to as a "soft" science. Rather than bristle under this label, we should embrace it as a challenge inherent to studying topics that are easily obscured by their complexity and by our own biases as individuals with stakes in and opinions about the topics we research. One weapon in the fight against this challenge should be strong theory, which can provide the kind of foundation that Darwin suggested would eventually guide psychology. As social psychological research increasingly springs from this kind of theoretical foundation and decreasingly leaks from practitioners' personal political biases, we will move forward to being the best soft scientists we can be.

References

- Alcock, J. (2001). *The triumph of sociobiology*. Oxford: Oxford University Press
- Allen, E., et al. (1975). Against sociobiology. *New York Review of Books*, 22(182), 184–186, (November 13).
- Axelrod, R., & Hamilton, W. D. (27 March 1981). The Evolution of Cooperation. *Science*, 211, 1390–96.
- Boyd, R., & Richerson, P. J. (1985). *Culture and the evolutionary process*. University of Chicago Press.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and brain sciences*, 12, 1-14.
- Conley, T. D. (2011). Perceived proposer personality characteristics and gender differences in acceptance of casual sex offers. *Journal of Personality and Social Psychology*, 100, 309-329.
- Conway, L. G. III, & Schaller, M. (2002). On the verifiability of evolutionary psychological theories: An analysis of the psychology of scientific persuasion. *Personality and Social Psychology Review*, 6, 152–166.
- Cosmides, L., & Tooby, J. (1994). Origins of domain-specificity: The evolution of functional organization. In *Mapping the mind: Domain-specificity in cognition and culture*, L. Hirschfeld & S. Gelman (Eds.), pp. 85-116. New York: Cambridge University Press.
- Dagg, A. I. (2005). *“Love of shopping” is not a gene: Problems with Darwinian psychology*. Montreal: Black Rose Books.
- Daly, M., & Wilson, M. (1978). *Sex, evolution and behavior*. Brooks Cole.
- Daly, M., & Wilson, M. (1988). *Homicide*. New York: Aldine.
- Darwin, C. (1859). *On the origin of species*. London: John Murray.
- Dawkins, R. (2009). *The greatest show on earth: The evidence for evolution*. Simon and Schuster.
- Duarte, J. L., Crawford, J. T., Stern, C., Haidt, J., Jussim, L., & Tetlock, P. E. (2015). Political Diversity Will Improve Social Psychological Science. *Behavioral and Brain Sciences*, 38, 1-13.

- Eagly, A. H., Wood, W., & Diekmann, A. B. (2000). Social role theory of sex differences and similarities: A current appraisal. In T. Eckes & H. M. Trautner (Eds.) *The developmental social psychology of gender*, 123-174. Psychology Press.
- Inbar, Y., & Lammers, J. (2012). Political diversity in social and personality psychology. *Perspectives on Psychological Science*, 7, 496-503.
- Funder, D. (2015). Towards a de-biased social psychology: The effects of ideological perspective go beyond politics. *Behavioral and Brain Sciences*, 38, 25-26.
- Gibson, E. J., & Walk, R. D. (1960). *The "visual cliff"*. WH Freeman Company.
- Hamilton, W. D. (1964). The genetical evolution of social behavior. *Journal of Theoretical Biology*, 7, 1–52.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33, 61-83.
- Holbrook, C. (2016). Branches of a twisting tree: Domain-specific threat psychologies derive from shared mechanisms. *Current Opinion in Psychology*, 7, 81-86.
- Kahan, D. M. (2012). Ideology, motivated reasoning, and cognitive reflection: An experimental study. *Judgment and Decision Making*, 8, 407-24.
- Kanazawa, S. (2010). Evolutionary psychology and intelligence research. *American Psychologist*, 65, 279-289.
- Kenrick, D. T., Neuberg, S. L., Griskevicius, V., Becker, D. V., & Schaller, M. (2010). Goal-Driven Cognition and Functional Behavior The Fundamental-Motives Framework. *Current Directions in Psychological Science*, 19, 63-67.
- Ketelaar, T., & Ellis, B. J. (2000). Are evolutionary explanations unfalsifiable? Evolutionary psychology and the Lakatosian philosophy of science. *Psychological Inquiry*, 11, 1–21.
- Krueger, J. I. & Funder, D. C. (2004) Towards a balanced social psychology: Causes, consequences, and cures for the problem-seeking approach to social behavior and cognition. *Behavioral and Brain Sciences*, 27, 313–28.

Kurzban, R., & Aktipis, C. A. (2007). Modularity and the social mind: Are psychologists too self-ish?.

Personality and Social Psychology Review, 11, 131-149.

Laland, K. N., & Brown, G. R. (2011). *Sense and nonsense: Evolutionary perspectives on human*

behaviour. Oxford University Press.

Lang, P., Davis, M., & Ohman, A. (2000). Fear and anxiety: animal models and human cognitive

psychophysiology. *Journal of Affective Disorders, 61*, 137-159.

Leary, M. R. (1999). Making sense of self-esteem. *Current Directions in Psychological Science, 8*, 32-35.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory.

Advances in Experimental Social Psychology, 32, 1-62.

Lyle, H. F., III, & Smith, E. A. (2012). How conservative are evolutionary anthropologists? *Human*

Nature, 23, 306–322.

Maynard Smith, J., & Price, G. (1973). The logic of animal conflict. *Nature, 246*, 15–18

Maynard Smith, J. (1982). *Evolution and the theory of games*. Cambridge University Press.

Meehl, P. E. (1978). Theoretical risks and tabular asterisks: Sir Karl, Sir Ronald, and the slow progress of

soft psychology. *Journal of Consulting and Clinical Psychology, 46*, 806-834.

Navarrete, C. D., & Fessler, D. M. T. (2005). Normative bias and adaptive challenges: A relational

approach to coalitional psychology and a critique of Terror Management Theory. *Evolutionary Psychology, 3*, 297-325.

Park, J. H. (2007). Persistent misunderstandings of inclusive fitness and kin selection: Their ubiquitous

appearance in social psychology textbooks. *Evolutionary Psychology, 5*, 860-873.

Paulhus, D. L., & Trapnell, P. D. (1997). Terror management theory: Extended or overextended.

Psychological Inquiry, 8, 40-43.

Penke, L., Borsboom, D., Johnson, W., Kievit, R. A., Ploeger, A., & Wicherts, J. M. (2011). Evolutionary psychology and intelligence research cannot be integrated the way Kanazawa (2010) suggested.

American Psychologist, 66, 916-917.

Pfister, H., & Bohm, G. (2015). Political orientations do not cancel out, and politics is not about truth.

Behavioral and Brain Sciences, 38, 34-35.

Pinker, S. (2003). *The blank slate: The modern denial of human nature*. Penguin.

Pinker, S. (2011). *The better angels of our nature: The decline of violence in history and its causes*.

Penguin UK.

Pinker, S. (2015). Political bias, explanatory depth, and narratives of progress. *Behavioral and Brain*

Sciences, 38, 35-36.

Pyszczynski, T., Greenberg, J., & Solomon, S. (1997). Why do we need what we need? A terror

management perspective on the roots of human social motivation. *Psychological Inquiry*, 8, 1-20.

Rose, H., & Rose, S. (2000). Introduction. In H. Rose & S. Rose (Eds.), *Alas poor Darwin: Arguments*

against evolutionary psychology, pp. 1–13. London: Harmony Books.

Schimmack, U. (2012). The ironic effect of significant results on the credibility of multiple-study articles.

Psychological Methods, 17, 551-566.

Sear, R. (2016). Beyond the nuclear family: an evolutionary perspective on parenting. *Current Opinion in*

Psychology, 7, 98-103.

Seegerstråle, U. C. O. (2000) *Defenders of the truth: The battle for science in the sociobiology debate and*

beyond. Oxford University Press.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology undisclosed flexibility

in data collection and analysis allows presenting anything as significant. *Psychological Science*, 22,

1359-1366..

Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press

Tetlock, P.E. (1998). Social psychology and world politics. In S. Fiske, D. Gilbert, & G. Lindzey (Eds.),

Handbook of social psychology (4th ed.), pp 865-912. New York: McGraw-Hill.

Tetlock, P.E. (1999). Theory-driven reasoning about possible pasts and probable futures: Are we

prisoners of our preconceptions? *American Journal of Political Science*, 43, 335-366.

- Tetlock, P.E. (2007). Psychology and politics: The challenges of integrating levels of analysis in social science. In E.T. Higgins & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles*. New York: Guilford.
- Thornhill, R., & Gangestad, S. W. (2008). *The evolutionary biology of human female sexuality*. Oxford University Press.
- Thornhill, R., & Palmer, C. T. (2001). *A natural history of rape: Biological bases of sexual coercion*. MIT press.
- Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, *11*, 375–424.
- Tooby, J. & Cosmides, L. (1992) Psychological foundations of culture. In J. Barkow, L. Cosmides & J. Tooby (eds.) *The adapted mind*, pp. 19–136. Oxford University Press.
- Tooby, J. & Cosmides, L. (2005). Conceptual foundations of evolutionary psychology. In D. M. Buss (ed.), *The Handbook of Evolutionary Psychology* (pp. 5-67). Hoboken, NJ: Wiley.
- Tooby, J., & Cosmides, L. (2010). Groups in mind: The coalitional roots of war and morality. In H. Høgh-Olesen (ed.), *Human Morality & Sociality: Evolutionary & Comparative Perspectives*, pp. 91-234. Henrik Palgrave MacMillan, New York.
- Trivers, R. L. (1971). Evolution of reciprocal altruism. *Quarterly Review of Biology*, *46*, 35–57.
- Trivers, R. L. (1972). Parental investment and sexual selection. In *Sexual Selection and the Descent of Man, 1871–1971*, ed. B Campbell, pp. 136–79. Chicago: Aldine-Atherton.
- Tybur, J. M., Miller, G. F. & Gangestad, S. W. (2007) Testing the controversy: An empirical investigation of adaptationists’ attitudes toward politics and science. *Human Nature*, *18*, 313–328.
- Tybur, J. M., & Navarrete, C. D. (2015). When theory trumps ideology: Lessons from evolutionary psychology. *Behavioral and Brain Sciences*, *38*, 40-41.
- Uher, J. (2011). Individual behavioral phenotypes: An integrative meta-theoretical framework. Why “behavioral syndromes” are not analogs of “personality.” *Developmental Psychobiology*, *53*, 521-548.

Van Lange, P. A. M., Balliet, D. P., Parks, C. D., & Van Vugt, M. (2014). *Social dilemmas: The psychology of human cooperation*. Oxford University Press.

Williams, G. C. (1966). *Adaptation and natural selection: A critique of some current evolutionary thought*. Princeton, NJ: Princeton University Press.

Wilson, E. O. (1975). *Sociobiology: The new synthesis*. Cambridge, MA: Belknap Press

Wilson, E. O. (2006). *Naturalist*. Island Press.

Winegard, B. M., & Deaner, R. O. (2013). Misrepresentations of evolutionary psychology in sex and gender textbooks. *Evolutionary Psychology, 12*, 474-508.