# Psicothema

# Social Cognition evolves: Illustrations from our work on Intergroup Bias and on Healthy Adaptation

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## Abstract

When we first wrote Social Cognition (1984), social psychology's crisis critiqued methods, replicability, theory, and relevance. Social cognition research illustrates four phases of response to these challenges. First, the Cognitive Miser approach introduced methods less prone to experimenter or participant interference: looking time as attention, categorical memory for who said what. Next, the Motivated Tactician approach addressed replicability by identifying moderator variables, primarily goals and motivations. For example, interdependence (Fiske) and threat (Taylor) are prominent motivations in our respective research. The third wave, perceivers as Activated Actors, translated mental states to behavior, using theory-guided prediction. In intergroup bias, for example, Fiske's Stereotype Content Model predicts patterns of discriminatory behavior distinctive to each combination of stereotypic warmth and competence. Going beyond reported behavior, distinctive activations emerged in brain-imaging and muscle responses. In health psychology, Taylor's Positive Illusions theory predicts people cope with life-threatening illness by viewing the odds optimistically, the self positively, and possible control affirmatively. Again, the social cognitive processes interplay with psycho-physiology. Recently, social cognitive approaches have increasingly addressed inequality: health disparities, bias interventions, power dynamics, class effects, social morality, and intent inferences. Viewing perceivers as Inequality Enablers answers any remaining doubts about the field's continuing relevance.

*Keywords:* Intergroup bias, healthy adaptation, social cognition.

## Resumen

*La Cognición Social evoluciona: ilustraciones de nuestro trabajo sobre Sesgo Intergrupal y Adaptación Saludable.* Cuando escribimos por primera vez Social Cognition (1984), la crisis de la psicología social cuestionaba los métodos, la replicabilidad, la teoría y la relevancia. La investigación sobre cognición social presenta cuatro fases en respuesta a estos desafíos. En primer lugar, el enfoque de la Avaricia Cognitiva introdujo métodos menos propensos a la interferencia del experimentador o del participante: considerar el tiempo como atención, o la memoria categórica para quién dijo qué. Posteriormente, el enfoque de la Motivación Táctica abordó la replicabilidad, al identificar variables moderadoras, principalmente objetivos y motivaciones. Por ejemplo, la interdependencia (Fiske) y la amenaza (Taylor) son motivaciones prominentes en nuestra respectiva investigación. Durante la tercera ola, los perceptores como Actores Activados transformaron los estados mentales en comportamiento, utilizando predicciones guiadas por la teoría. En el sesgo intergrupal, por ejemplo, el Modelo de Contenido de Estereotipos de Fiske predice patrones de comportamiento discriminatorio diferentes para cada combinación de calidez y competencia estereotípicas. Yendo más allá de la conducta manifiesta, surgieron activaciones distintivas en imágenes cerebrales y respuestas musculares. En psicología de la salud, la teoría de las Ilusiones Positivas de Taylor predice que las personas se enfrentan con las enfermedades mortales viendo las posibilidades de manera optimista, su autoimagen positivamente, y el posible control afirmativamente. Nuevamente, los procesos cognitivos sociales interactúan con la psicofisiología. Recientemente, los enfoques cognitivos sociales han abordado la desigualdad: desigualdades en salud, intervenciones sesgadas, dinámicas de poder, efectos de clase, moralidad social, e inferencias intencionadas. Considerando a los perceptores como Facilitadores de la Desigualdad responde cualquier duda que pudiese quedar acerca de la relevancia de este campo en la actualidad.

*Palabras clave:* sesgo intergrupal, adaptación saludable, cognición social.

Social Cognition research is the field of scientific knowledge that addresses how people think about themselves, the people they know, and the social world more generally. What makes the field revolutionary is that there was so little scientific interest in and discussion of these topics until they formally became "social cognition."

Early in the cognitive revolution, we found ourselves teaching and researching social cognition, but without a graduate-level (or any level) reference work. When invited, we agreed to write it, thinking that if we had already prepared our respective graduate seminars, the book would be easy. Several years later, we had learned how challenging it is to be pithy, let alone scholarly and entertaining. That book eventually appeared in 1984, at some

short-term cost to our careers. It soon had reliable sales, and no re-sales—people were keeping it, unlike most textbooks. We arrived early enough to define a field and become the reference of record. A series of publishers brought out editions in 1984, 1991, 2008, 2017, and 2020. Now it is the most-cited publication for each of us. Upon Fundación BBVA's recognition of our 1984 edition's impact, the Frontiers in Knowledge Award has sparked attention to the origins and development of this field. The *Psicothema* editor has asked us what changed over time. We have two short answers and a long answer.

The short answers: The sheer volume of research in social cognition is probably the biggest change. There are now hundreds of research articles in the area each year. The other big change is how much social cognition has influenced people in the other sciences, especially in economics. We also get contacted by biologists, political scientists, anthropologists, even chemists, about social cognition, so it now has high visibility across the sciences.

The long answer appears in each edition of our book, as the model of the human social thinker evolved over time, and we aimed to characterize the research trends, each edition. The main part of this essay offers an intellectual history of social cognition research, from the cognitive miser to the inequality enabler. But first, we describe the context that shaped the book. *Social Cognition* was in part a response to a crisis, a precedent eerily similar to the current one.

### Crisis in Methods, Replicability, Theory, Relevance

All sciences undergo both gradual and sudden change as a function of ongoing discovery and self-correction. Sudden changes are harder to absorb. Crises in the field of psychology challenge a fresh PhD to evaluate the state of the field and her potential role in it. Just as now, in 1978, we had a crisis in social psychology, and the issues overlapped the current ones (Fiske, 2017), including *methods, replicability, theory,* and *relevance*. These issues persist from the earlier crises of scientific psychology (Giner-Sorolla, 2019). So the current crisis might be seen as Crisis 3.0.

During the 1970s crisis, the authors faced all these recurring issues. During our early collaborations, we heard rumors that some flashy results did not replicate; only the original lab could pull them off. Social psychology then was dominated by laboratory experiments on cognitive dissonance and consistency theories more generally. That work seemed to some young firebrands to be irrelevant to pressing social problems: war, civil rights, environment, healthcare. Besides being irreproducible and irrelevant, the field seemed stuck on grand theory, not practical, down-to-earth, falsifiable midrange theory. Finally, dubious methods artifacts (e.g., experimenter expectancy) called into question all our findings. Or so it seemed to skeptics of the time.

Several responses advanced the field beyond crisis. Arguably, social cognition research was one such response (for others, see Taylor, 1998). Social cognitive approaches answered the crisis by offering precision and reliability, borrowing rigorous methods from more micro areas such as cognitive science, generating fine-grained falsifiable theories, and addressing relevant social issues. Two of the social issues included the development of intergroup bias research and the founding of health psychology, respectively Fiske's and Taylor's career specialties.

### Social Cognition Models, as Crisis Response

In answer to "what has changed," we would offer that social cognition approaches have changed over the years since 1984, as the field developed in stages. The main part of the essay illustrates each phase. Immodestly, but because of the venue, all these illustrations come from our labs over the years. Countless others' work would serve as well or better (for reviews, see Fiske & Taylor, 1984-2020). But, these are the examples we know best. The cited work exemplifies various ways the field has characterized social perceivers: Cognitive Misers, Motivated Tacticians, Activated Actors, and Inequality Enablers. The end of the essay samples some of our recent work to illustrate our ongoing responses to Crisis 3.0.

### Cognitive Misers: The Origins of Social Cognition Research

At the time we were invited to write *Social Cognition,* 1950s-60s social psychology had generated many motivational meta-theories (e.g., drive for consistency), mind-free applications of learning theory (e.g., social rewards), and some rational-actor models (e.g., reasoned attitudes driven by self-interest motives). As part of the cognitive revolution, social cognition approaches dispensed with motivation and became unabashedly mentalistic. The strategy was to push purely cognitive explanations to their limits, to see how much they could explain without recourse to meta-motivation. Along the way, the cognitive mechanisms dethroned that rational actor who makes reasonable decisions, instead revealing a litany of fallibility, due to the human thinker's imperfections. This toppling of the old models was front and center, as *the social cognition field first modeled the person perceiver as a Cognitive Miser—saving scarce on-line processing capacity by taking shortcuts, such as stereotypes and decision-making heuristics* (Fiske & Taylor, 1984).

To illustrate, our very first collaboration began when Fiske, a college senior frustrated by a lackluster thesis, decided to get serious about research. She knocked on newly arrived Assistant Professor Taylor's door and volunteered to help run her research. Taylor had developed some ideas about how people efficiently infer social causality, based on Heider's (1958) theory of behavior engulfing the field. That is, people thoughtlessly attribute a person's behavior to whatever plausible stimulus captures their attention; often, the behaving person is the salient foreground against the abstract, static situation. Taylor had in mind a study capturing people's attention by mere seating position. Everyone would observe the same dyadic interaction, but from different points of view that would make one or the other actor more salient. Sure enough, people believed that the salient person (the one they were facing) had influenced the conversation more than the less salient person that other observers were facing. A series of studies ensued, and a young convert was inspired to join the field as Taylor's advisee. At the end of Fiske's graduate training, we published a review of our salience research (Taylor & Fiske, 1978), showing that cognitive misers attribute causality off the top of their heads.

Besides using salience as a shortcut, cognitive misers form impressions from social categories. As we showed, observers categorize actors by race and gender, linking their comments to their category but not their individual person (Taylor, Fiske, Etcoff, & Ruderman, 1978). That is, observers could remember that a woman made a particular comment, but not which woman. What became

known as the "who-said-what paradigm" developed into the field's standard way of showing how observers were categorizing others and using the categories as mnemonic shortcuts.

Another of the cognitive miser's cognitive shortcuts assumes a moderately positive default for other people, all else being equal. A new acquaintance who is typically nice and sufficiently capable requires few online resources to get to know; conventional expectations can apply. In contrast, someone negative (mean or stupid) requires more scrutiny, as does someone extreme in either direction (morally monstrous or saintly; intellectually an idiot or a genius). The key cognitive-miser prediction is that deviation from the (moderately positive) baseline (by extremity or negativity) is informative and triggers effort. Diagnostic information elicits both attention and weight in the overall impression. In Fiske's dissertation (1980), participants viewed pairs of photographs depicting 16 individuals' degree of (un)friendliness and responsible civic (dis)engagement. As predicted, perceivers' looking time and algebraic weight in forming an impression each reflected both negativity and extremity. Cognitive misers did not bother much with people who fit the slightly positive baseline, reserving their effort for when it mattered (informative negative or extreme).

From the outset, the cognitive-miser model proved useful by (a) catalyzing new cognitive methods that minimized experimenter bias and subjectivity (e.g., looking time), (b) generating falsifiable theory (c) with mental process variables, mediators (e.g., attention) and (d) moderators (e.g., category fit) that should specify conditions for obtaining one effect (shortcuts) or another (thoughtful judgments). As a result, the approach had real-world relevance. Nevertheless, the cognitive miser was a bit bloodless, lacking motivation and context.

*Second Wave: Motivated Tacticians' Thinking Is for Doing*

Our field's founders had considered social cognitive questions from a pragmatic, cognitive-miser viewpoint. For example, James (1890) described the "finite and practical self," who must be "always unjust, always partial, always exclusive" (pp. 959-960). He described the perceiver's finite understanding as being in the service of acting, which Fiske's review paraphrased as thinking is for doing (Fiske, 1992). Other early person-perception frameworks had followed this pragmatic perspective (Asch, Bruner, Allport, Heider, Tajfel, Jones).

In the 1970s and 80s, the cognitive-miser view had initially neglected the pragmatics of thinking, with a narrow focus on context-free cognitive process and outcome. But toward century's end, the new field of social cognition began to recognize that social understanding serves social interaction (Fiske, 1992). Three patterns of findings were emerging: Perceivers adopt good-enough strategies for everyday purposes; they are not inevitably as error-prone as clueless cognitive misers might seem. Second, perceivers construct meaning through concepts such as traits, stereotypes, and stories, going beyond the information given, in Bruner's felicitous terms. Finally, *perceivers' thinking strategies depend on their goals: People are motivated tacticians—sometimes cognitive misers, but sometimes deeper thinkers—depending on their purpose in making sense of a person*. Strategies depend on varying motives, such as self-enhancement or social interdependence, to determine when to make more or less effort. Again, our research illustrates, by now in the separate domains of intergroup bias (Fiske) and in health psychology (Taylor).

*Fiske's focus on interdependence motivations in the social cognition of category-based bias.* Fiske was (and remains) fascinated by people's ability to make sense of the complicated stimulus that is another person. Clearly, Taylor et al.'s who-said-what data showed instant categorization, consistent with the cognitive miser, but Fiske's dissertation showed a different kind of process, more thoughtful and piecemeal. When do people use the one rapid strategy and when the more detailed one? To explain when people do and do not go beyond shortcuts, such as categorical defaults, Fiske and colleagues built a dual-process framework based on this and related work (Fiske & Neuberg, 1990; Fiske, Lin, & Neuberg, 1999). In the Continuum Model, perceivers start with a short-cut impression, categorizing the other person by salient cues, such as gender, race, age. People prioritize these category-based impressions, stopping there if fit is good-enough for their everyday purposes (e.g., interacting with a cashier). If fit is not good (e.g., the cashier's gender is ambiguous) or motivation is high (e.g., the cashier is the friend of a friend), the perceiver devotes more attention. Increased attention can move impressions from simple category-based stereotyping to fully individuated, attribute-based impressions. People form impressions using different tactics, depending on information and motivation such as interdependence.

Motivated tacticians show up in all kinds of places, from shipyards to investment banks (Fiske, Bersoff, Borgida, Deaux, & Heilman, 1991). To illustrate one relevant real-world implication, in gender discrimination lawsuits, the plaintiff might not show malignant intent, but could show reckless use of categories in workplace evaluations. Managers who rely on category-based shortcuts are failing to individuate candidates for hiring and promotion. In providing expert testimony to this effect, Fiske aimed to bring up-to-date science into the courtroom, but Fiske had no idea that the testimony would reach all the way to the Supreme Court. Fortunately for Fiske and for social cognition research, the justices found the argument so obvious ("icing on the cake") that it hardly required an expert witness—a perfect example of hindsight bias. But science won the day.

Expert witnessing uncovered one illustrative motive neglected in stereotyping research: power. Peers perceiving peers had been the paradigm in prejudice research. But many consequential decisions entail power-holders judging the less powerful (e.g., bosses judging subordinates; Fiske, 1993); subordinates' outcomes depend on the power-holder, so the interdependence is asymmetrical. Power should moderate stereotyping for several reasons. First, power-holders, because they control resources, *need not* individuate subordinates as much as vice versa. Attention focuses up the hierarchy. Second, power-holders may *not want* to overcome their stereotypes; powerful positions select for individuals focused on self more than others. Finally, power-holders are outnumbered by subordinates, so they *cannot* attend fully to each one. Subsequent experiments supported the power-as-control model (Dépret & Fiske, 1999; Goodwin, Gubin, Fiske, & Yzerbyt, 2000; Operario & Fiske, 2001; Stevens & Fiske, 2000): Power motives make perceivers vulnerable to stereotyping, another example of motivated social cognition. Power, which is asymmetrical interdependence, has an antidote in symmetrical interdependence. For example, interdependence motivates people to think harder about another person, whom they need (Erber & Fiske, 1984).

Motivated social cognition is not limited to how people think, superficially versus carefully. Motives also flavor what people think. Relational interdependence may introduce bias, as when people hope for a longer-term relationship and observe

the other through rose-colored glasses (Goodwin, Gubin, Rosen, & Rosenthal, 2002). Another case in point: Men and women are intimately interdependent, but men have more societal status. How do perceivers negotiate this complexity? Ambivalent Sexism (Glick & Fiske, 1996) provides one answer. Hostile sexism targets women who refuse intimate interdependence with men (career women, lesbians, feminists), viewing them as cold (but perhaps capable). Subjectively benevolent sexism—patronizing prejudice—views women in more traditional roles (secretary, housewife) as warm but incompetent. Sexism takes distinct forms, endorses different stereotypes, depending on interaction context, and interdependence motives inform this analysis.

*Taylor's focus on health threat as motivating social cognition in health*. In keeping with the motivated tactician's interplay between cognition and motivation, Taylor also was thinking about hierarchy and the motivations it triggers (Taylor & Lobel, 1989). Social comparison motivates both sides of the relative ranking: People compare downward to self-evaluate against a lower-ranked person and therefore feel good. For example, newly diagnosed patients often compare their prognosis with similar others with a worse prognosis, to keep their own spirits up. However, people comparing upward cannot celebrate their advantage, but they can get information and affiliation, that is, inspiration. Newly diagnosed patients may consult similar others who have recovered, in order to get guidance and to feel hopeful. So the motives guide cognitive strategies to minimize threat.

As the examples suggest, Taylor's work had been moving away from social cognition per se, to social cognition in the service of adaptation, particularly in the psychology of health. Working in (indeed founding) the domain of health psychology (Taylor, 1986), Taylor applied cognitive models to motives triggered by consequential health events. These issues required understanding how people cope with life-threatening illness, which triggers more thought than a cognitive miser might offer. An early set of interviews with cancer patients led to the insight that their explanations and predictions about their illness attributed unrealistic control to themselves and their providers; these motivated beliefs helped them to cope (Taylor, Lichtman, & Wood, 1984).

In another melding of health and social cognition, Taylor's (1991) mobilization-minimization hypothesis also exemplifies the shift from the cognitive miser to foreshadow the motivated tactician, who sometimes thinks with more effort when necessary. Here, she argued that people normally take positive events for granted, but negative events (such as a life-threatening illness) require mobilization—immediate physiological, cognitive, emotional, and behavioral responses—in order to cope. Then other processes minimize the response (Taylor, 1991). Mobilization is crucial but costly, so the motivated tactician knows when to be cognitive miser (not just careful about cognitive bandwidth, but also stingy in physiological, emotional, and behavioral reactivity).

Threatening events muster cognitive responses that aid coping, Taylor (1983) had argued earlier. Her theory described cognitive adaptation by three processes: finding meaning in the experience, developing a sense of mastery (control), and self-enhancement. These processes create illusions, cognitively biased toward optimism. A theme of Taylor's work has been that positive illusions may be more adaptive than brutal accuracy (Taylor, 1989). Both cognitive limits and motivations to cope with threat explain how people make sense of themselves, others, and their situation, in order to cope with adversity, especially in health.

Overall, the motivated-tactician view, in returning to psychology's earlier pragmatism (thinking is for doing), inspired new methods (e.g., scales such as the Ambivalent Sexism Inventory), encouraged replicability by specifying moderating motives (e.g., power, social comparison), provided societal relevance (e.g., coping with health threat, power's role), and encouraged new theory (e.g., mobilization-minimization, Ambivalent Sexism).

### 21st Century Activated Actors: Social Brain and Social Mind

Equipped with social motives, *social cognition research expanded further to behavior, viewing the social perceiver as activated actor*. Two of the most-often recruited mechanisms were cognition-behavior activation in the mind and a direct route to behavioral tendencies correlated with brain activation. Our work again illustrates.

In health psychology, women's biobehavioral responses show fundamental activations to stress that add to those usually emphasized by studying men (Taylor et al., 2000). Stress often triggers a fight-or-flight response in male and female mammals. But adding females to more samples suggested another response, rooted in social attachment: tend and befriend. Stress may trigger protection of offspring and connection with support networks.

Meanwhile, in bias research, the Stereotype Content Model (Fiske et al., 2002) aimed to specify distinctive patterns of discriminatory behavior toward different outgroups, depending on how they are represented. Stereotype content is systematic and predictable. Two dimensions capture impressions of groups encountered in daily life: What are their intentions, warm (friendly, trustworthy) or not? And are they competent (capable, assertive) or not? These two judgments, warmth and competence, create a map of stereotype content in a given society. For example, their own middle class are allegedly both warm and competent, whereas refugees are stereotypically neither warm nor competent. The one group elicits pride, the other disgust. The warmth-by-competence space differentiates two kinds of mixed combinations: high warmth but low competence (pitiable older people), or high competence but low warmth (enviable rich people). Stereotype content's downstream consequences include distinctive emotional prejudices, as noted. These emotions in turn predict distinctive behavioral tendencies (for a recent review, see Fiske, 2015b). If the twin dimensions of warmth and competence capture so much of the variance in social cognition about groups, then each quadrant should also evoke typical neural signatures, and they do (e.g., Cikara, Botvinick, & Fiske, 2011; Harris & Fiske, 2006).

Activated actors respond affectively—assessed through neural responses, facial muscle activity, and reported emotional prejudice; affect in turn predicts behavior, better than cognition alone. This era, in Fiske's lab and many others, benefited from methodological advances that went beyond words and cognition narrowly defined, to include affect and behavior. Regarding the 1970s crisis (by then forgotten): Predicting behavior required reliable and reproducible results. Theory proved useful in this regard, and societal relevance emerged.

### Inequality Enablers: Social Cognition and Social Relevance

Although research in social cognition—and social psychology generally—has long studied intergroup issues, only recently has inequality itself emerged as a central societal-relevance focus.

Besides the earlier work on social comparison in Taylor's lab and power in Fiske's lab and others (Guinote, 2017), the status dimension generated *Envy Up, Scorn Down: How Status Divides Us* (Fiske, 2010; 2011). Social class too became focal in social cognition research (Fiske, 2015a; Fiske & Markus, 2012; Moya & Fiske, 2017). The essential message emerged: *Social cognitive processes (e.g., biases, shortcuts, inattention), especially in higher-status perceivers, enable inequality at interpersonal levels*. In one illustrative example, well-intentioned high-status people talk down to lower-status people, downplaying their own competence in an effort to seem warm; worried about their image, they patronize the less privileged person. This merely reinforces the status system, whether it be based on prestige or race (Dupree & Fiske, 2019; Swencionis & Fiske, 2018).

In health psychology, inequality takes a life-or-death form as health disparities due to unhealthy environments (Taylor, Repetti, & Seeman, 1997). Multiple pathways affect both chronic and acute disorders. Both class and race create contexts that shape community, work, family, and peer interaction to predict both positive and adverse health outcomes across the lifespan.

In a more specific instance of inequality, families can create risky environments that undermine their offspring's health (Repetti, Taylor, & Seeman, 2002). Risky families feature conflict and aggression; relationships are unsupportive, cold, and neglectful. This context makes children vulnerable and worsens any genetic vulnerabilities. The combination disrupts their psychosocial functioning (especially social competence and emotion processing) and their stress responses (in biological regulation and neural activation). These psycho-bio-social mechanisms show how risky environments get under the skin and affect life outcomes into adulthood (Taylor, 2010).

In Fiske's lab, families provide yet another basis for inequality: ageism as intergenerational resource competition (North & Fiske, 2012). Although the default old-age stereotype affords pity for the allegedly warm but incompetent elder, this applies only to cooperative elders, who step aside for the next generation. The self-serving elder forfeits all sympathy—more so than a comparably self-serving middle-aged or younger person (North & Fiske, 2013). Generational tensions center on elders ceding timely succession (jobs, wealth, political power), shared consumption (healthcare benefits, highways), and identity (music, styles, technology). Ageism as resource tension is widespread, given rapidly graying populations (North & Fiske, 2015).

Moving from the interpersonal to the cross-national, ambivalent stereotypes in general serve a broad social function: Income inequality predicts the use of ambivalent stereotypes (Durante et al., 2013). That is, more unequal countries have a more complicated status system to explain. Some high-status groups seem to deserve their good fortune (the hard-working middle-class), and some do not (inheritors of wealth); some low-status groups seem deserving of help (elders, children, disabled), and some do not (drug addicts, homeless people). Explaining the trajectories of different immigrant groups also draws on narratives that reflect each quadrant's distinctive profile.

More equal countries have essentially two stereotypic groups: citizens of all kinds, who deserve the social welfare state, seeming both warm and competent, plus interlopers who do not deserve social welfare, seeming neither warm nor competent (refugees, Roma, nomads). In contrast to more unequal countries, equal ones produce fewer ambivalent stereotypes.

All kinds of stereotypes prioritize warmth (trustworthiness, friendliness), underscoring the role of other people's perceived intent (cooperative or competitive) in interpersonal and intergroup relations. Intent also determines who deserves sympathy and blame. Intent is central to social cognition. People are motivated to attribute intent (or not), particularly for harm. Intent magnifies harm. That is, intentional harms seem worse, even when they are not, all else held exactly equal (Ames & Fiske, 2013). A nurse's intentional drug mix-up seems more harmful than if it were unintentional. People are so motivated to blame and punish intentional wrongdoers that they will choose blaming to the exclusion of other appealing activities (Ames & Fiske, 2017). Online, they will click envelope icons—with more speed, quantity, and persistence—to recruit signatures supporting their blame-and-punish judgment for intentional harmdoers. People's motivation to magnify such intentional harms has implications for moral and legal judgments.

To summarize, Inequality Enablers endorse stereotypes and other judgments that determine who is deserving and who is blameworthy. Illustrative targets here include older people, lower SES, and harmdoers.

Recent work in Taylor's lab has integrated early social cognition findings on the beneficial psychological effects of self-affirmation and self-enhancement with their biological underpinnings. This work has drawn heavily on how social cognitions function in stressful situations. For example, when people are challenged by the demands of difficult circumstances, affirmations of the self and personal values buffer neuroendocrine stress responses in ways that beneficially affect biological as well as psychological functioning. Over time, these processes may affect patterns of chronic illness and longevity as well (Taylor, 2010).

Research by Taylor and her colleagues has also addressed the importance of social cognition in extracting, providing, and making effective use of social support. A vast amount of research shows that relatives, friends, and even strangers can provide information, resources, and emotional support that helps people manage stressful events. Social cognition research adds an important twist to these robust findings. Simply believing that there are supportive people in your social environment can mitigate otherwise negative psychological and biological consequences of stress, even if that support is never used (Taylor, 2011).

Finally, social cognitive research has become fully relevant to current issues. Although certainly earlier work had been socially relevant as well, the groundswell of interest in social class, power, morality, and politics qualifies as studying a new image of social perceivers.

*Crisis 3.0: 21st c Solutions*

Current work in social cognition shows some new trends in methods and topics. Both our labs, going back to the earlier crisis responses, have always used multiple methods to counteract artifacts due to particular methods. Accordingly, stereotype content data come from current surveys, historical sources, on-line interactions, in-person laboratory experiments, brain-imaging, and electromyography. Most recently, we have applied natural language processing to analyze open-ended and public corpus stereotype content using machine learning (Nicolas, Bai, & Fiske, under review). Converging results are reassuring.

Replicability goes beyond one lab's converging methods. Another lab tried to replicate our warmth-competence space

using multi-dimensional scaling (Koch et al., 2016). They reproduced our competence dimension, but not the primary one, warmth. And they found a new one, progressive/conservative beliefs. After some trepidation, we engaged in an adversarial collaboration. In the process, we have discovered moderating conditions: Our results (warmth and competence) emerge in more person-level intergroup contexts (neighborhood). Their results (agency/status/competence and beliefs) emerge in more distant intergroup contexts (nation) (Nicolas et al., under review). Ongoing Fiskelab projects reflect other trends in the field: big data, computational modeling, and economic games each have their proponents. Another recurring crisis concern, relevance, reminds us to consider contexts beyond American internet samples. As noted, the stereotype content model replicates across cultures, with moderators by region.

Likewise, Taylor's 21st c work innovates on a theme central throughout current psychological thinking, and that is the importance of integrating biological perspectives with psychological ones. With that in mind, we turn briefly to one of the most severe health threats currently facing the world, namely the coronavirus pandemic currently sweeping the world.

Coronavirus not only threatens health directly but threatens the most important resources people have for dealing with such a threat; the chief such resource is social support. For safety reasons, we must restrict our social contacts, yet we know that social isolation is bad for health. Were it not for the threat it poses, social support would be the mainstay of effective coping with this threat. What we don't yet know is how much of the benefits of social contact can be conferred by virtual contact, that is by talking on the telephone, emailing, and even watching people discuss common problems on television. It is possible, then, that this dire health threat will present an opportunity to understand more fully how, when, and why social contact is so vital to human psychological and physical functioning.

## Conclusions

To be sure, social cognition does not encompass psychology—or even social psychology—but serves here as a case study in scientific response to crises of confidence in a field. Modern social cognition research serves as one among many renovations to what in dire moments seemed a collapsing field. Science sometimes advances abruptly (Kuhn, 1970), and these crisis responses, as well as ongoing science, give us many reasons to be optimistic for future generations.

## Acknowledgements

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