

Lab Meets World: The Case for Use-Inspired Basic Research in Affective Science

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Abstract

We join others in envisioning a future for affective science that addresses society's most pressing needs. To move toward this vision, we consider a research paradigm that emerged in other disciplines: use-inspired basic research. This paradigm transcends the traditional basic-applied dichotomy, which pits the basic goal of fundamental scientific *understanding* against the applied goal of *use* in solving social problems. In reality, these goals are complementary, and use-inspired basic research advances them simultaneously. Here we build a case for use-inspired basic research—how it differs from traditional basic science and why affective scientists should engage in it. We first examine how use-inspired basic research challenges problematic assumptions of a strict basic-applied dichotomy. We then discuss how it is consistent with advances in affective science that recognize context specificity as the norm and consider ethical issues of use being a complementary goal. Following this theoretical discussion, we differentiate the implementation of use-inspired basic research from that of traditional basic science. We draw on examples from recent research to illustrate differences: social problems as a starting point, stakeholder and community engagement, and integration of research and service. In conclusion, we invite affective scientists to embrace the “lab meets world” perspective of use-inspired basic research as a promising pathway to real-world impact.

Keywords: affective science, use-inspired basic research, basic research, applied research, stakeholder engagement, community-engaged research

A global pandemic. Racial and social injustice. The climate crisis. Human rights revoked or under attack. In the face of these urgent and intersecting challenges, affective science must strive to be useful and usable. As we look to the future of the field, we question the ingrained distinction between basic and applied research. Here we make the case for use-inspired basic research, a paradigm that transcends the basic-applied dichotomy.

Scientific research has traditionally been classified as basic or applied (Brooks, 1979; Stokes, 1997), including in psychological science (Lewis, 2021; Wolfe, 2016). Basic research is intended to advance fundamental understanding of a scientific phenomenon, with no specific application or end-use in mind. Applied research, in contrast, aims to provide a practical solution to a specific social problem. Use-inspired basic research disrupts this dichotomy by asking fundamental scientific questions “at the heart of a social problem” (Stokes, 1997).

In this perspective paper, we examine use-inspired basic research as a key pathway through which affective science can address pressing issues in society. We first review the concept of use-inspired basic research, which originated in other disciplines. We then demonstrate how this framework aligns with recent advances in affective science. Finally, we differentiate use-inspired basic research from traditional lab-based approaches to basic science.

Overcoming the Entrenched Dichotomy between Basic and Applied Research

The basic-applied dichotomy is rooted in a history that contrasts the scientific goals of understanding and use such that they are pursued separately (Stokes, 1997). Under this dichotomy, it is assumed that basic science devoted to constructing a general, explanatory body of knowledge will eventually improve the human condition (Stokes, 1997). The basic-applied model adopted by U.S. government agencies following WWII specified a unidirectional linear

path by which basic scientific advances are translated to practical use (Bush, 1990). On this model, basic research guides practical application by eliminating dead ends, thus enhancing efficiency. In contrast, applied research elaborates and applies what is known to the real world, translating possible into actual.

These dichotomous, directional assumptions are at odds with science that exemplifies both basic and applied goals (Stokes, 1997). Such an approach is illustrated by Louis Pasteur's classic microbiology research in the 19th century. Pasteur studied the problem of deriving alcohol from beet juice in order to understand the workings of microorganisms. This research not only addressed the applied goal of improving fermentation, but also informed the framework that would give rise to germ theory. Pasteur became known for advancing fundamental understanding of the process of disease while also producing the contextualized know-how for solving a specific public health issue.

This example, among many others, demonstrates that basic and applied goals are not inevitably at odds (Anckaert et al., 2020; Stokes, 1997). Applied goals do not undermine scientific creativity and rigor, and pursuit of fundamental understanding does not exclude consideration of use. Stokes (1997) referred to this paradigm in which the goals of understanding and use intersect as "use-inspired basic research." By explicitly linking the two sets of goals, use-inspired basic research serves the critically important function of connecting scientific and policy communities. This paradigm also addresses concerns about the ivory tower's unending pursuit of basic science at the public's expense.

As in other disciplines, the basic-applied dichotomy is a dominant framework in the history of psychology (Lewis, 2021; Wolfe, 2016). While basic and applied science have often

been juxtaposed in terms of methodological legitimacy (Lewis, 2021; Mook, 1983), changes are afoot. The “public psychology” of using our work to address pressing issues in society is emerging as a shared value of many psychological scientists (Eaton et al., 2021; Lewis, 2021). The paradigm of use-inspired basic research is one approach to realizing this shared value and rethinking the entrenched dichotomy (Hirsh-Pasek & Golinkoff, 2019).

Use-Inspired Basic Research Aligns with Advances in Affective Science

Affective scientists are responding to the call for public psychology. In a recent article in *Psychological Science in the Public Interest*, for example, a group of affective scientists with different theoretical perspectives and methodological expertise joined forces to review scientific findings on emotional expressions with the goal of informing real-world application. Specifically, Barrett et al. (2019) examined whether a person’s emotional state (e.g., anger, disgust, fear, happiness, sadness) can be precisely inferred from their facial expression. The key conclusion was that facial expression alone is not a faithful indicator of emotional state. Yet application is currently proceeding based on the opposite inference—that specific emotions are reliably signaled by a corresponding facial expression. Barrett et al. provide many problematic examples of this spurious assumption being applied in the real world (e.g., early childhood education, U.S. legal system). The authors indicate an urgent need for research that addresses how people express and perceive emotional expressions in everyday life contexts.

Use-inspired basic research offers a framework for addressing this call to action. Barrett et al.’s (2019) review is just one example of how the accrual of findings highlights the need to incorporate context into affective science (Barrett, 2022) and related fields (Cikara et al., 2022; Henrich et al., 2010; Wolfe, 2016). These advances reflect a shift away from implicit

assumptions of generalizability toward recognition of context specificity as the norm. This shift aligns with default assumptions of heterogeneity and context dependency in applied psychology (Lewis, 2021).

These converging ideas provide further support for dissolving strict boundaries between basic and applied science. When applied use is a goal of basic research, the external validity of decisions involving participants, setting, materials, and other contextual features of a study are highly salient. By explicitly specifying the context of use in everyday life, such research establishes a link to application from the beginning. This paradigm thus avoids the confusion of determining whether basic research findings are applicable, and to which contexts.

Embracing applied use as a research goal also draws attention to ethics. A historical argument for the basic-applied dichotomy is that basic science should be free from the confines of application prioritized by the government and other powerful funding agencies, such as war and national defense (Stokes, 1997). Upholding this dichotomy, however, shields basic scientists from integrating ethical frameworks such as social justice. As we review next, research can advance “basic” understanding while also addressing social justice issues. Moreover, social justice scholarship highlights theoretical gaps in affective science, particularly in how systems-level perspectives shape the study of affective phenomena (for examples of such theoretical development, see Leach & Bou Zeineddine, 2021; Lozada et al., 2022; Mahoney et al., 2021).

Differentiators of Use-Inspired Basic Research

We now turn to how use-inspired basic research is implemented, with a focus on research addressing social justice issues. We focus on differentiating this type of research from

how basic science is typically conducted—that is, on applied use as a complementary goal rather than an optional byproduct. To expand on examples in the sections that follow, Table 1 presents several recent studies that illustrate this approach.

Social Problem as Starting Point

Use-inspired basic research takes a specific social problem as the starting point for the research. For basic science to be useful, the research must be *relevant* to a social problem. Recent work inspired by the #MeToo movement exemplifies this approach. Following high-profile cases in which alleged perpetrators of sexual assault were cast by their defenders as the “real” victim (i.e., of false accusations), Flusberg et al. (2022) investigated the efficacy of this rhetorical strategy. They found that so-called *victim framing* works as intended: participants expressed more support for an alleged perpetrator of assault after reading a news report that framed him as the victim, compared to an otherwise identical report that used no victim-related language.

This work illustrates the value of prioritizing applied use alongside the pursuit of fundamental understanding. The findings apply directly to real-world instances of victim framing in the media because the stimuli were designed to closely mirror them; in other words, the study was designed for direct translation. In fact, one of Flusberg et al.’s (2022) experiments showed that the effects of victim framing extend to the real event that inspired the research: the 2018 assault allegations against then-Supreme Court nominee Brett Kavanaugh.

The experimental design also enabled basic insight into how framing works. The framing effects were driven by participants who cited the “victim” label as influencing their evaluations, suggesting that they interpreted it as a social-pragmatic signal of who deserved support

(Flusberg et al., 2022). This insight would have gone unnoticed had the investigators not asked participants to cite the language they found most influential—a method derived from basic research on framing (Holmes et al., 2022; Thibodeau & Boroditsky, 2011). Recognizing the potential for established basic science methods to address a social problem can provide the impetus for pursuing understanding and use as joint research goals.

Stakeholder and Community Engagement

Stakeholder engagement in research—the active involvement of citizens, service providers, or other decision-makers—is a pathway to improving the quality, reach, and impact of research (Ahmed & Palermo, 2010; Hoekstra et al., 2020; Wallerstein, 2021; Warren et al., 2018). Working with people who will be impacted by, implement, and/or disseminate the research increases its likelihood of serving the intended use. To supplement the brief review that follows, Table 2 describes selected readings that expand on frameworks introduced here and offer practical guidance for selecting participatory research methods and navigating potential barriers.

Engaging with stakeholders representative of the people whose lives will be affected by the research often shapes research priorities and questions (Lewis et al., 2020; Wallerstein, 2021). Recent research on environmental concern illustrates this process (Lewis et al., 2020). Evidence suggests a tendency to underestimate the environmental concern experienced by racially/ethnically minoritized and low-income Americans, with the largest effects observed for those who identify as Latina/o (Pearson et al., 2018). To inform interventions that might dispel this misperception, Lewis et al. (2020) partnered with Latina/o community organizations involved with the Environmental Defense Fund. Focus groups with members of these

organizations revealed that concern about eco-oriented issues (e.g., climate change, industrial pollution) was integrated with, and inextricable from, concern about social issues like economic inequality and racism. For example, discarded drug needles in poorer neighborhoods were identified as a leading environmental issue—as litter and a barrier to safely enjoying green space. A novel research question emerged: does conceptualization of what “counts” as an environmental issue vary with race/ethnicity and socioeconomic status? A subsequent quantitative study showed that the answer is yes: racially/ethnically minoritized and lower-income Americans were more likely than white and higher-income Americans to endorse poverty, drug abuse, and racism as environmental issues (Song et al., 2020). This study stemming from stakeholder engagement advances understanding of how issues are conceptualized while also informing efforts to broaden public engagement in the environmental movement (Lewis, 2021; Song et al., 2020).

A specific orientation to research has emerged for working equitably and collaboratively with stakeholders: community-based participatory research (CBPR; Wallerstein, 2021). CBPR is conducted *with* the community during all stages of the research, instead of *on* or *for* the community in an extractive manner (Ortiz et al., 2020; Rodriguez Espinosa & Verney, 2021). This approach is grounded in the needs of a community, values the community’s ways of knowing, and commits to sustained impact through community capacity-building and social justice advocacy. Affective science that embraces CBPR meaningfully incorporates culture into theory and research questions, intervention development, and measurement tools (Rodriguez Espinosa & Verney, 2021). A recent example is research investigating the emotional consequences of climate change experienced by Inuit from Nunatsiavut (Canada), including

feelings of grief and other intense emotions related to loss of species, ecosystems, and landscapes (Cunsolo & Ellis, 2018; Cunsolo Willox et al., 2013). Understanding these emotional experiences directly informs community-based, on-the-land support for emotional health, as well as policy addressing climate change losses.

Integration of Research and Service

In U.S. academic institutions, research is typically separated from and prioritized over service (Armani et al., 2021; Green, 2008). Use-inspired basic research is one avenue to bridging research and service, especially public service (Sinha, 2016). Such integration is an opportunity to positively reshape the social contract between science and society (Wall et al., 2017).

An inspiring example of merging research and service is Project Prakash, founded by MIT professor Pawan Sinha (2016, 2013). The mission of Project Prakash is to treat blind children, and with their help, illuminate fundamental questions about how the visual system develops (<https://www.projectprakash.org/>). In India, where Sinha grew up, blind children rarely receive an education and are at increased risk for abuse, with as many as 60% dying within a year of going blind. Upon learning that child blindness is treatable and preventable in nearly 40% of cases, Sinha recognized an opportunity to synergistically advance humanitarian and scientific efforts (Sinha, 2013, 2016). His team partners with an eye hospital in New Delhi to provide surgical care and follow-up to cataract-stricken children and conduct research with consenting families as the children learn to see. Project Prakash has improved the lives of thousands of children, advanced understanding of the visual system and cross-modal interaction, and initiated important policy changes (Sinha, 2016).

Use-inspired basic research further integrates research and service when outputs are communicated to the general public and decision-makers (Wall et al., 2017). This type of research facilitates such communication because it is contextually embedded in real-world problems, making findings less likely to be inappropriately generalized—a common problem in communicating basic science (DeJesus et al., 2019; Lewis, 2021; Lewis & Wai, 2021). Moreover, when community stakeholders are engaged throughout the research, findings are more likely to reach and be trusted by relevant segments of the public. Finally, the values that guide use-inspired basic research often resonate with students and can be readily integrated into their scientific training (Holmes, 2020).

Conclusions

In conclusion, we encourage a shift toward the “lab meets world” perspective of use-inspired basic research. This paradigm offers a path for affective science research to have greater impact on the global challenges we face. Psychological scientists who have adopted this approach discovered that they can “answer deep questions in a context that makes a difference for real people” (Hirsh-Pasek & Golinkoff, 2019, p. 40).

Use-inspired basic research, however, is not the norm (Amara et al., 2019). Institutional systems and incentives play a significant role in supporting such an approach (Flagg, 2022). For example, despite growing recognition and an increasing number of funding opportunities, community-engaged research remains underutilized in psychology (Rodriguez Espinosa & Verney, 2021). Uptake will require systemic changes to address current barriers: recruiting and retaining diverse researchers, providing training opportunities, and valuing relationship building with local communities (e.g., in tenure and promotion; Rodriguez Espinosa & Verney, 2021).

We join other psychological scientists in expressing optimism that such change is possible (e.g., Lewis, 2021). For many of us trained in basic science, this will require considering real-world contexts in which understanding directly contributes to social solutions and humbly building relationships to ethically and equitably engage in research. As Flagg (2022) succinctly put it, “this is about science for people, not science for scientists.”

Statements and Declarations

On behalf of all authors, the corresponding author states that there was no conflict of interest.

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Table 1

Example affective science studies that align with use-inspired basic research.

Article	Social Justice Issue	Basic Understanding	Applied Use	How-To Highlight
Cunsolo Willox et al. (2013)	Climate Injustice	In a community-led participatory project with the Rigolet Inuit Community, participants shared feelings of anger, sadness, depression, fear, and uncertainty in response to the changing land, snow, ice, and weather, as well as the impacts on culture, sense of self-worth, and health. The concept of “ecological grief” emerged from this study and other related research (see Cunsolo & Ellis, 2018 for further discussion).	Create spaces and places for expanding and enhancing emotional health, including for sharing feelings on the changing climate that may foster community cohesiveness. Opportunities to spend time on the land are integral to this effort. At the level of climate policy, include emotional impacts in the conceptualization of climate change loss and damage (see also Cunsolo & Ellis, 2018).	A transdisciplinary team of Indigenous and non-Indigenous researchers conducted this research as part of the <i>Changing Climate, Change Health, Changing Stories</i> project in Rigolet, Nunatsiavut, Labrador, Canada. Harper et al. (2012) describe the project’s guiding principles of transdisciplinarity, community participation, and social equity, and discuss challenges, methods, and lessons learned.
Flusberg et al. (2022)	Gender-Based Violence	Framing a male alleged perpetrator of sexual assault as the “real” victim (of false accusations) increased support for him and reduced support for his female accuser because observers inferred that the victim label was intentionally chosen to be informative.	Recognize how strategic deployment of victimhood language minimizes the perceived severity of sexual assault, and advocate changing how journalists, lawyers, and the general public communicate about this issue.	Holmes (2020) describes engaging undergraduates in use-inspired basic research, from gauging students’ comfort level with a sensitive topic to supporting advanced students in conducting the studies in Flusberg et al. (2022).
Gandhi et al. (2017)	Health Inequity & Stigma	Following treatment for dense congenital bilateral cataracts, newly sighted children showed preserved plasticity for developing the ability to identify visual patterns as faces. Over a period of several months, the children learned to discriminate between faces and nonfaces at a	Enhance social acceptability and awareness of treatable and preventable child blindness in India and internationally. Findings of significant visual recovery even after extended congenital blindness build an evidence base for ophthalmologists to provide	Sinha (2013, 2016) describes Project Prakash, a humanitarian and scientific effort to treat blind children, and with their help, illuminate fundamental questions about how the visual system develops. The operational model is shared, potential pitfalls are

		high level of proficiency, suggesting that visual experience plays a significant role in categorical face perception.	treatment to older children and inform policy changes regarding screening and treatment, as well as educational opportunities.	addressed, and other opportunities for merging science and service are highlighted.
Legette et al. (2021)	Racial Injustice	Teachers' cultural deficit beliefs predicted negative perceptions of Black boys' behavior. Teachers' cultural deficit beliefs (i.e., racial inequities being attributed to cultural values) were related to perceiving Black Boys' behavior as more hostile, representative of a behavioral pattern, and serious, as compared with little to no impact on perceiving White boys' behavior.	Recognize how macrosystem messages impact teachers' perceptions of students' behavior. Instead of education programs and schools implementing brief trainings, view reduction of cultural deficit beliefs as lifelong work. Consider interventions such as continued teaching support groups to facilitate awareness and address inequitable actions.	Use of vignettes that were professionally filmed with child actors in school settings, and emotion perception questions grounded in the stereotypes that impact teachers' punitive behaviors toward students (e.g., perceiving a student's behavior as hostile and aggressive, and as indicative of a pattern vs. an isolated incident).
Loughman & Haslam (2018)	Mental Health Stigma	A meta-analysis of 26 studies showed that neurobiological explanations for mental disorders were adversely linked to stigma toward people with mental health problems (e.g., greater desire for social distance, perceived dangerousness, and pessimism about recovery), similar to other biogenetic explanations.	In public communication about the neurobiological dimensions of mental health problems, avoid reductionism (e.g., psychiatric conditions as "chemical imbalances") and emphasize plasticity rather than determinism, reflecting neuroscientists' more nuanced understanding of neural phenomena.	Meta-analysis was motivated in part by observations of public discourse: a large-scale study of print media coverage indicated that advances in neurotechnology are often described in essentialist terms (Racine et al., 2010)—implying that neurobiologically-based conditions are discrete, unalterable, and identity-defining.
Oren-Schwartz et al. (2023)	Forced Displacement	Mindfulness-Based Trauma Recovery for Refugees (MBTR-R) is a mindfulness- and compassion-based, trauma-sensitive, and socioculturally adapted intervention for refugees and asylum-seekers. Reduced shame from pre- to post-intervention mediated improvement	Iteratively refine MBTR-R, based on understanding of therapeutic mechanisms, to provide opportunities for healing from the trauma and injustice of forced displacement and to inform evidence-based scaling strategies. The brief, group-based, low-cost	Key measures were translated and evaluated for use with Eritrean asylum seekers, including cognitive interviewing to ensure linguistic and sociocultural meaning. Aizik-Reebs et al. (2021) describe the sociocultural delivery of MBTR-R with Eritrean asylum

		in posttraumatic stress for the MBTR-R intervention group (vs. waitlist control) in a population of Eritrean asylum seekers.	nature of MBTR-R means it can be readily scaled up even in under-resourced health systems.	seekers residing in Israel (e.g., delivery in a safe space in the local asylum-seeker community, sharing a mid-session meal).
Song et al. (2020)	Environmental Racism & Classism	Racially/ethnically minoritized and lower-income Americans were more likely than white and higher-income Americans to endorse poverty, drug abuse, and racism as environmental issues. These group differences were partially mediated by environmental justice perceptions.	Develop a more inclusive approach for building diverse coalitions in the environmental movement, which prioritizes the intersection of ecology and justice in messaging and meaningful solutions (see Lewis et al., 2021 for further discussion).	Lewis et al. (2020) describe the qualitative research that inspired this study, illustrating how qualitative approaches can improve quantitative inferences. Stakeholder engagement also prompted pivoting away from a different research question.

Note. Efforts focused on supporting individuals and communities are necessary and can be impactful. However, the roots of these intersecting social problems will not be addressed without enacting policies at all levels of governance.

Table 2

Selected readings on community-engaged research and stakeholder engagement.

Article	Brief Summary
Duea et al. (2022)	This article provides a guide and overview to selecting participatory research methods based on project and partnership goals across all stages of research.
Eaton et al. (2021)	This article introduces a special issue in <i>American Psychologist</i> on the concept of public psychology. The discussion and overview of articles in the special issue examines the role of Psychology in public life and social issues.
Fine et al. (2021)	This article introduces and unpacks Critical Participatory Action Research as an approach designed with and for communities experiencing harm and injustice.
Rodriguez Espinosa & Verney (2021)	This systematic review examines the utilization of community-based participatory research (CBPR) in Psychology. The review includes an overview of CBPR, and based on findings that CBPR is underutilized, the authors present recommendations for increasing its use within the field of Psychology.
Wallerstein (2021)	This article introduces a special section of the <i>American Journal of Community Psychology</i> on advances in community-based participatory research and community-engaged research for improving health and health equity.
Ortiz et al. (2020)	This scoping meta-review uses an empirically derived CBPR framework to synthesize findings from review articles. The four domains in the framework structure the review: research contexts, partnering processes, intervention and research designs as outputs of shared decision-making, and outcomes.
Hoekstra et al. (2020)	This systematic review examines the research partnership literature. A review of reviews was conducted to synthesize literature on the principles, strategies, outcomes, and impact of research conducted in partnership with stakeholders.
Warren et al. (2018)	This article discusses rigor in collaborative, community-engaged scholarship that advances equity-oriented, social justice agendas. The authors address navigating tensions that can arise through relationship building and trust.
Skinner et al. (2018)	This article examines community stakeholders' perspectives on researchers, academic institutions, and how community is valued in research. Strategies to increase researcher preparedness to engage with communities are discussed.
Newman et al. (2011)	This article discusses the community advisory boards (CABs) that formalize the academic-community partnerships guiding CBPR. The authors discuss best processes for forming, operating, and maintaining CABs for CBPR.
Lindau et al. (2011)	This article provides an example of community and university partners effectively engaging in impactful research to realize a shared vision. Key steps in an asset-based strategy involving multiple stakeholders are described.
Ahmed & Palermo (2010)	This article describes a community engagement framework developed by the NIH Director's Council of Public Representatives. The framework specifies values, strategies to operationalize each value, and potential outcomes.

