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Towards an Integrative Psychological Science

Issues, Approaches and Applications

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Seeking Convergence Between Experimental and Survey Methods for Investigating Organizational Behaviour in a Virtually Connected World



Ritu Tripathi and Naureen Bhullar

Abstract Select scholarly reviews suggest that experimental research has been losing favour in organizational behaviour (OB) research in the past three decades. We suggest that this is primarily due to sampling, setting, and selection bias issues. To counteract these challenges, we revisit the merits of experimental research especially with an emphasis on the advantages conferred by causality and efficacy. The drawback of the artificiality of the lab setting is addressed with the recommendation for a greater use of Web-based experimentation in organizational behaviour. This is especially relevant in the contemporary virtually connected world where much work is carried out via technology-enabled communication channels. Sampling, experimental manipulations, dependent variables measurement, manipulation checks, and ethical considerations of Web-based experimentation are examined in detail with examples from the OB literature.

Keywords Organizational behaviour (OB) · Experimental method · Web-based experiments · Virtual work · Remote workforce

The sensational research findings that Facebook can alter the emotions of thousands (Kramer et al., 2014) and affect the voting behaviour of millions (Bond et al., 2012) are striking. Not only do they speak to the hidden influence of social media, but they highlight the vulnerabilities of human populations to Web-based *experimental manipulations*. As if Asch's (1951) confederates have been replaced by behind-the-screens devious algorithms. The behavioural outcomes of the unsuspecting netizens, though, are not as inconsequential as judging the length of the lines. It cascades to macro-level social and political outcomes. And the sample size is not a handful of study participants, but thousands and millions. This intersection of virtuality and

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human behaviour is all the more relevant in circa 2020, when owing to the worldwide COVID-19 pandemic, the interpersonal, social, and organizational dynamics have got redefined, and the computer screen has taken the place of the brick-and-mortar offices, schools, colleges, and universities. Most human interactions are happening online, and the social fabric is being knit by technology-enabled communication channels and networks. This does not seem to be a temporary event, but is being called the ‘new normal.’

In such socio-technological zeitgeist, then, one wonders at one’s role as a social psychologist. While the unfolding of the human behaviour in a variety of social situations, in and of itself is interesting to anyone, let alone to a social psychologist, the human vulnerability to virtual influence, as identified in the research studies cited above, opens up a plethora of unsettling questions to the psychologist. For instance, was Bond et al.’s (2012) breakthrough large-scale experiment on Facebook’s influence on voting behaviour a fore-warning for the 2016 U.S. Presidential elections? Could the policy drawing upon such research have instituted better checks and balances? Could the masses have been alerted and sensitized about the alarming influence of social media? Could the capitalistic businesses, knowing the research findings, have done better with more stringent privacy and safety controls?

These are big questions. But answers do not necessarily require big data. Experimental social psychological research conducted at a smaller scale, is an effective tool to provide generalizable insights, not only to *causally* explain, but also to predict and control a phenomenon of basic and applied interest. The policy impact of insights derived from the current surge of behavioural experimental economics is a good example. On the one hand, it illustrates the cross-fertilization of academic research and public policy (Benartzi et al., 2017; Soman, 2015; Thaler & Sunstein, 2008), and on the other, it illustrates the rising use of experimental research in development and policy-relevant sub-fields of economics (e.g. Levitt & List, 2007; see also Banerjee & Duflo, 2009).

In yet another sub-discipline critical to management education and research, organizational behaviour (OB), the methodological undertones of epistemology reveal a different story. OB—commonly defined as the scientific study of human behaviour in organizations—is fundamental to management curriculum (Brown et al., 2013; Singh & Schick, 2007) as well as to the application of behavioural science research for organizational effectiveness (Luthans et al., 2015). Whereas the foundational contributions of social psychology to OB are well-acknowledged (Katz & Kahn, 1978; Thibaut, 1959), the signature methodology of social psychology—controlled experimentation—has fallen out of favour in recent years in OB circles (for a review see Eden, 2017; Greenberg & Tomlinson, 2004; Scandura & Williams, 2000). The trend is a bit intriguing because landmark historical events that set the tone for people-centred approach in organizations—right from Elton Mayo’s Human Relations Movement in the Hawthorne Plant (1924–1933; for a review see Sonnenfeld, 1985) to Kurt Lewin’s Social Action Research (e.g. Lewin et al., 1939)—carried a strong emphasis on experimental paradigms (for a review see Danziger, 2000).

In this chapter, we briefly discuss the reasons for the declining interest in experimental approach among OB researchers. This is followed by a review of the merits of experimental method with a few illustrative examples. The chapter closes with a discussion on the central theme of the chapter—the relevance of *Web-based experiments* (for reviews see Birnaum, 2004; Reips, 2002, 2008) in OB research and managerial implications.

Experimental Research Falling Out of Favour in OB

Scandura and Williams (2000) noted a significant decline in published research employing experimental methods in top management journals as a whole, in the mid-nineties compared to the mid-eighties, specifically in the *Academy of Management Journal*, *Administrative Science Quarterly*, and the *Journal of Management*. Greenberg and Tomlinson (2004) note that experimentation is conspicuous from its absence in current handbooks dedicated to organizational behaviour (Golembiewski, 2000), organizational psychology (Anderson et al., 2002), industrial and organizational psychology (Dunnette & Hough, 1990). Even research methods in industrial and organizational psychology textbooks (Rogelberg, 2002) have failed to devote a single chapter to experimentation. These observations have led researchers to conclude ‘experimentation’s low profile among organizational scholars.’ (Eden, 2017, p.114).

The reasons for the rift mainly can be summarized as the three S’s: sampling, setting, and selection bias.

Sampling

A readily available and streamlined procedure of undergraduate ‘subject pool’ in most Western universities facilitates lab-based experimental research. To participating students, this provides an exposure to the use of experiments as a research tool, in addition to some amount of college credit and/or monetary compensation. However, findings from the student sample are not well-received in management in general and in OB in particular. Based on significant differences found between the student and non-student sample, management researchers dismiss this as the ‘science of the sophomores’ (originally referenced in McNemar, 1946; for a review see Gordon et al., 1986; Peterson, 2001) and caution organizational researchers against relying on the conclusions derived from research conducted among student samples.

Setting

The same set of critics draw attention upon another drawback of experimental research. The research is conducted in the ‘labs’ which are contrived artificial settings markedly different from the ‘real world’; therefore, the findings are low on generalizability and ecological validity. The findings derived from experimental artefacts are of little use to applied management science. OB research must be conducted in organizations, among working professionals, for it to be relevant to the field. The conception of the organization being the traditional brick-and-mortar workplace—which, according to the critics, must be the sites of research and data collection, as these afford the natural ambience in which work is carried out.

Selection Bias in Publications

Another reason why experimental research finds few takers in OB is the editorial gatekeeping. Barring notable exceptions such as *Organizational Behavior and Human Decision Processes* (OBHDP), publication of experimental research is on a decline, even in applied I-O psychology journals. Cascio and Aguinis (2008) found a significant decrease in the use of experimental methods in the *Journal of Applied Psychology* (JAP) in the period 1963–2007. Another I-O psychology focused journal, *Personnel Psychology*, did not have any published articles on human factors applied experimental psychology during this period. In the case of JAP, Cascio and Aguinis note: [instructions from the American Psychological Association to exclude] “clinical and applied experimental or human factors, for which there are more appropriate American Psychological Association journals” (American Psychological Association, 2007; cited in Cascio & Aguinis, 2008, p. 1075). Editorial gatekeeping and disciplinary boundaries, therefore, keep most lab-based experimental research that is potentially relevant to answering research questions and theory building in organizational behaviour restricted to basic psychology journals, deepening the methodological and epistemological divide.

Do Not Throw the Baby Out with the Bathwater: Merits of Experimentation Revisited

Although controlled experimentation has declined in OB because of certain limitations and challenges, key merits of experimental research need to be revisited for OB researchers to take a fresh look at the basic and applied value of this tool. This is important because methodological orientations are fundamental to scientific

discovery and epistemological progress in any discipline. Disfavouring a methodological tool that is known for certain inherent merits stalls this progress. Kuhn (1970) took note of such lack of openness in the progress of science:

To a great extent these are the only problems [paradigm-specific] that the community will admit as scientific or encourage its members to undertake. Other problems, including many that had previously been standard, are rejected as metaphysical, as the concern of another discipline, or sometimes as just too problematic to be worth the time. A paradigm can, for that matter, even insulate the community from those socially important problems that are not reducible to the puzzle form, because they cannot be stated in terms of the conceptual and instrumental tools the paradigm supplies. Such problems can be a distraction ... (Kuhn, 1970, p. 37).

Methodological foci might reflect the current epistemological paradigms within OB. However, with respect to controlled experimentation, three merits that OB researchers would 'insulate' themselves from at their own peril are causality, efficacy, and artificiality.

Causality

Experimentation, as all social scientists know, is the gold standard for establishing the cause and effect relationship: the process allows for the temporal separation of the cause from the effect—a necessary and sufficient condition for establishing causal relationships (Cook & Campbell, 1979; Davidson, 1967). In the absence of this, much of correlational research masquerades as causal. A bulk of knowledge in OB is built using cross-sectional self-report survey measures—which, although allowing for more 'real-life' data collection opportunities among employees and working professionals in organizations, have inherent limitations such as cognitive and reporting biases (Nisbett & Wilson, 1977; Schwarz, 1999). Whereas scholars suggest structural and statistical procedures to overcome the limitations (Podsakoff et al., 2003) the methods are inadequate for making causal inferences even with longitudinal designs (Williams, 2007). Controlled experiments allow for causal inferences while ruling out alternative explanations, thereby providing the researchers and practitioners a greater degree of confidence in the cause–effect inferences about a phenomenon.

Efficacy

Another strength of experimental research is that with effect size computations, it allows for the detection of the efficacy or the effectiveness of the causal treatment on the outcome. Effect size—that is how strong or powerful the causal impact of the independent variable on the dependent variable is—is especially relevant to experimental designs, because over and above the significance tests, it allows researchers to estimate the strength or the magnitude of the phenomenon of interest (Cohen, 1977;

Lakens, 2013; McGraw & Wong, 1992). Experimental designs often reveal that subtle manipulations have large effects, that is, the interventions or treatment conditions are particularly efficacious in obtaining large psychological and behavioural outcomes. For example, Johnson and Goldstein (2003) found that organ donation rates across several European countries differ drastically by a minor variation in the construction of the donor registry form: whether the form asked the potential donors to ‘opt-in’ or ‘opt-out’ of the organ donation program. Forms that had the opt-out as the default option had a much higher rate of organ donation. The effect size was dramatically high, with 60 percentage points separating the two groups. Hence, the seemingly minor variation in the extant conditions was shown to have profound behavioural implications.

Artificiality

Although controlled experimentation has been critiqued for creating a contrived artificial environment in the lab, with little or no relevance to the real world, researchers often see this artificiality as a virtue (Henshel, 1980). The scientific goal is to “maximize artificiality deliberately so as to discover regularities that do not presently obtain under the “real” conditions...but which are *capable* of existing...” (Henshel, 1980). Experiments allow researchers to design potentially conceivable situations in a lab setting. The artificiality, drawing upon theoretical premise, hence is a precursor for possibilities in real life—which are meaningful to scientists and practitioners alike.

Although yet to be wholeheartedly recognized by OB scholars, these merits have not been entirely ignored by the management scholars in general. There have been recent calls by management journal editors to contribute to the field with experimental research (e.g. Colquitt, 2008, *Academy of Management Journal* on publishing laboratory research; Schilke et al. *Organization Science Special Issue on Experiments in Organizational Theory*, 2019). In experimental paradigms, whereas laboratory and field experiments are well-documented as methodological tools (Hauser et al., 2017), in the current digitally connected world, Web-based experiments, as described below, hold much promise for scientists and practitioners in OB.

Web-Based Experiments: Relevance to OB

The terms ‘Web experiment’ ‘Web-based experiments’ have been used interchangeably and were coined in mid-1990s to distinguish them from laboratory and field experiments (Reips & Krantz, 2010). Web-based experiments refer to true experiments—the manipulation in the experimental conditions and the random assignment is dynamically done over the Internet without any human intervention. The ‘virtual’ participant could be sitting in the office, home, classroom, laboratory, anywhere around the globe.

Web-based experiments inherently adopt the social psychological experimental paradigm of controlled experimentation, with Internet, instead of a brick-and-mortar lab—being the platform for experimental manipulation as well as measurement. This offers a methodological advantage for OB researchers because the Internet, in many ways, is the *organization* within which the work is carried out, be it digitally mediated communication, cross-border virtual team collaboration, or in the upcoming domains such as e-leadership (Avolio et al., 2014). In many ways, it mimics the ‘field experiments’ with a higher degree of control and versatility in the design of experimental manipulations and behavioural measures, as well as access to populations around the world.

Two examples illustrate this point:

(1) **Small World Problem**

Ever since Stanley Milgram’s experimental answer to the small world problem—‘Given any two people in the world, person *X* and person *Z*, how many intermediate acquaintance links are needed before *X* and *Z* are connected’ (Milgram, 1967, p.259; Travers & Milgram, 1969), the ‘six degrees of separation,’ has been a mainstay of empirical literature and popular discourse. Scientists, however, have wondered about the nuances of the social network ties in modern-day digitally connected world. On the one hand, any person is just a ‘google-search’ away and can be easily reached by e-mail given the digital footprint of modern-day working professionals; on the other, there is little clarity on the actual nature of the network ties. For instance, would the network ties vary globally? What would be the features of network ties if target from various different countries belonged to different professions? Have the number of degrees changed since the 1960s? In order to investigate these questions, a team of sociologists at Columbia University (Dodds et al., 2003) took an online version of Milgram’s experiment to a ‘global’ scale, by creating an Internet-based experiment, replacing letters with e-mail communication. Participants registered online (<http://smallworld.sociology.columbia.edu>) and were randomly allocated one of 18 target persons from 13 countries. Targets, among others, included a professor at an Ivy League university in USA, a police officer in Perth, Australia, a technology consultant in Gurgaon, India, and a veterinarian in the Norwegian army. Participants, like Milgram’s study, were asked to initiate an e-mail chain to a social acquaintance whom they considered ‘closer’ than themselves to the target. Internet search for the target was prohibited as sender in each step had to report the type of relationship and level of closeness with the recipient. All e-mails were sent through the Website developed for the experiment, so the senders and receivers could be tracked.

The results indicated that despite the large number of participants who signed up, only 34%, compared to 75% in Milgram, was likely to forward the e-mail to the next acquaintance for the chain to complete; the overall chain completion rate was also small (0.4%). Incentives, it was concluded, are critical to such tasks; voluntarism, expected of participants, did not yield successful outcomes. However, where the experiment corresponded closely with Milgram that the mean path length of completed chains was between 5 and 7; ‘six degrees of separation’ holds even in the digitally connected world. However, social connections varied by profession

and nature of relationship. For example, although family and friendship were the most frequent tie used in e-mail chains, it is the professional ties that yielded more successful results, even when the level of closeness was ‘casual’. The results from the Internet-based experiment provided key insights in social connections in the digitally connected world, besides triggering a spate of research on associated topics (see Watts, 2004) thereby providing an effective methodological tool to study a classic phenomenon relevant to social networks, group behaviour, and online voluntarism.

(2) Project Implicit

In April 2018, in a Starbucks café, located in Philadelphia, USA, two black men, like other customers, were seated in the cafeteria when their request for the bathroom keys without a food order, aroused the suspicion of the store manager who called the police. The police upon arriving immediately arrested the men without a preliminary investigation warranted in such circumstances. Eyewitness’ accounts and viraled videos revealed that the store manager and the police had acted on impulsive gut reactions borne out of racism and biased attitudes towards blacks. The incident resulted in nationwide outrage and Starbucks store closures. Starbucks CEO, Kevin Johnson, in the aftermath of the incident, among other remedial measures, immediately announced an ‘implicit bias’ training for all Starbucks employees. Starbucks closed 8,000 stores for half a day to train 175,000 workers, at an estimated cost of \$12 million.

Whereas the effectiveness of such training is not yet established (Dobbin & Kalev, 2018) what is striking is that ‘implicit bias’ which now has entered the managerial and practitioners’ discourse has history in lab-based controlled experimentation (see Banaji & Hardin, 1996; Greenwald et al., 1998; for a review see Greenwald & Banaji, 1995). These researchers theorized that implicit attitudes—that is ‘attitudes that influence judgement, decision-making, and behaviour in ways that are outside of conscious awareness and/or control’—are critical to understanding social phenomena such as stereotyping, discrimination, prejudice, and racial bias. A computer-based task, *Implicit Association Test* (IAT), was designed to tap such attitudes. In the IAT, participants are asked to pair the target stimuli (e.g. Black and White faces for a ‘race-IAT’) with evaluative attributes (e.g. pleasant and unpleasant words) using two designated keys. Subjects typically perform this task more quickly and easily when pleasant attributes share the same response key as the implicitly liked stimuli.

IAT and the associated literature on implicit attitudes got considerable momentum and public attention when it got posted as an online laboratory at Harvard (project implicit.net). With resources available for researchers as well as organizations, IAT now runs as a Web-based experimental tool, facilitating increased awareness and interest about a phenomenon that otherwise would have been limited to academic and research community. Much of Starbucks’ training modules, for example, drew from this literature.

The two examples above illustrate how Web-based experiments have helped advance research in two interrelated ways: by demonstrating how a well-established phenomenon operates in a virtually connected world—as the ‘Small World Problem’

research team did, and by showing the transformative impact of lab-based psychological research to a wider audience—as the project implicit did. In both cases, Internet helped circumvent the problems, conventionally associated with lab-based experimental methods.

How, then, can one effectively design Web-based experiments? What are some of the recent advances in the online use of experimental techniques in psychology that OB researchers can draw from, especially to conduct studies with estimated sample size and power?

Web-Based Experiments: Nuts and Bolts

In the early 2000s, psychologists interested in conducting controlled experimentation on the Internet required programming skills (for a review see Birnbaum, 2000, 2004; Fraley, 2004). The last decade, however, saw the emergence of user-friendly tools such as Qualtrics (www.qualtrics.com) which provided fast and easy ways to design sophisticated experiments and run them over the Internet. For example, Qualtrics allows random assignment to experimental conditions, branching, embedding the JavaScript, and the use of multimedia stimulus. Table 1 summarizes a few such studies to provide illustrative examples of how topics, relevant to OB, have been investigated via Web-based experiments. Additional details on these studies as well as on key meta-principles of Web-based experiments, such as the sampling, online engagement, manipulation of independent variables and the behavioural dependent measures, and ethical considerations are provided below.

Sampling

The advent of Web-based research has also seen the corresponding innovation in recruitment and sampling procedures. Amazon's Mechanical Turks—the online crowdsourcing platform—has become a common time- and cost-effective means to collect data among workers who are also more representative than college students (Buhrmester et al., 2011; Paolacci et al., 2010). Besides the ubiquitous use of Amazon's Mechanical Turks, other online sources have also been utilized, including crowdsourcing platforms like clickworker.com and YouTube and Google videos (see Table 1).

Web-based experiments also allow populations of applied interest. For example, Tripathi et al. (2018) targeted corporate professionals in India and the United States in experimentally testing the effect of autonomy-supportive conditions on the motivation of Indians and Americans. They did so by contacting the managers in multinational companies who then forwarded the request to their employees. A Web-based experiment facilitated data cross-cultural data collection across countries in a cost- and time-effective manner.

Table 1 Few examples of Web-based experimental studies

S. No.	Research study	Independent variable manipulations	Behavioural dependent measure	Sampling source
1	ten Brinke and Adams (2015). Saving face? When emotion displays during public apologies mitigate damage to organizational performance Studies 1, 2a, 2b	<i>Study 1:</i> Apologies retrieved online, verbal content, facial affect (deviant-happy/normative-sad) analysed <i>Study 2a</i> (Silent video): Actor enacting an apology in a scenario with three types of affect (deviant/normative/ none) <i>Study 2b</i> (Subtitled video): Same as 2a but with subtitles added and two types of affect only (deviant/normative)	<i>Study 1:</i> Organizational performance <i>Study 2a:</i> Sincere remorse, reconciliation, repair, company confidence, performance predictions <i>Study 2b:</i> Sincere remorse, company confidence, performance prediction	<i>Study 1:</i> Google news, Google Videos, and YouTube <i>Study 2a:</i> Amazon Mechanical Turks <i>Study 2b:</i> Amazon Mechanical Turks
2	Guzman and Espejo (2018). Introducing changes at work: How voice behaviour relates to management innovation Study 2	<i>Study 2:</i> Four conditions—2 (voice: high vs. low) × 2 (resource availability: high vs. low) between-subjects design	<i>Study 2:</i> Promotive voice behaviour, willingness to discuss ideas, and management innovation	<i>Study 2:</i> www.clickworker.com , a crowdsourcing web platform
3	Hafenbrack and Vohs (2018). Mindfulness Meditation Impairs Task Motivation but Not Performance Experiments 1, 3, 4 & 5	<i>Experiment 1:</i> Two conditions—Mindfulness meditation manipulation and mind-wandering comparison <i>Experiment 3:</i> Three conditions—Mindfulness meditation manipulation, writing comparison, and reading comparison <i>Experiment 4:</i> Two conditions—Mindfulness meditation manipulation and mind-wandering comparison <i>Experiment 5:</i> Two conditions—Mindfulness meditation manipulation and mind-wandering comparison	<i>Experiment 1:</i> Task motivation <i>Experiment 3:</i> Task motivation, task performance, future focus, state arousal <i>Experiment 4:</i> Task motivation, task performance, future focus, state arousal <i>Experiment 5:</i> Task performance, detachment from stressors, task focus	Amazon mechanical turks

(continued)

Table 1 (continued)

S. No.	Research study	Independent variable manipulations	Behavioural dependent measure	Sampling source
4	Lupoli et al. (2018). Paternalistic lies Study 2, 3, 5	<p><i>Study 2</i>: Four conditions- 2 (Deception: honesty vs. paternalistic lying) × 2 (Choice set: choice set 1 vs. choice set 2) between-subjects design</p> <p><i>Study 3</i>: Eight conditions- 2 (Deception: honesty vs. lying) × 2 (Lie type: paternalistic lie vs. unequivocal prosocial lie) × 2 (Choice Set: choice set 1 vs. choice set 2) between-subjects design</p> <p><i>Study 5</i>: Eight conditions—2 (Deception: honesty vs. lying) × 2 Communication: communication vs. no communication) × 2 (Choice set: choice set 1 vs choice set 2) between-subjects design</p> <p><i>Study 6</i>: Four conditions—2 (Lie Type: paternalistic lie vs. unequivocal prosocial lie) × 2(Communication: communication vs. no communication) between-subjects design)</p>	<p><i>Study 2</i>: Moral character of sender and positive affect</p> <p><i>Study 3</i>: Moral character of sender and positive affect</p> <p><i>Study 5</i>: Punishment, moral character of sender and positive affect</p> <p><i>Study 6</i>: Moral character of sender and positive affect</p>	Amazon Mechanical Turks (Study 2, 3, 5,6)
5	Tripathi et al. (2018)	<p><i>Study 1</i>: Autonomy-supportive versus obligations-oriented motivational cues</p> <p><i>Study 2</i>: Autonomy versus obligations-oriented Instructional sets</p>	<p><i>Study 1</i>: Time spent on a voluntary task</p> <p><i>Study 2</i>: Preference for the instructional set</p>	Indian & American corporate professionals (Study 1) Amazon Mechanical Turks (Study 2)

Online Experimental Manipulations and Behavioural Dependent Measures

Web-based experiments lend themselves to sophisticated experimental manipulations and dependent measures. For example, in a meta-analysis of research studies that used Internet-based affect induction procedures, the effect size was found to be comparable to lab-based affect induction procedures; affect induction procedures on Internet induced almost all affective states like general positive affect, general negative affect, fear, disgust, anger, sadness, and guilt (Ferrer et al., 2015).

Online studies have made effective use of audio and video stimulus. For example, ten Brinke and Adams (2015) analysed the impact of emotional displays during public apologies on the organization's performance in a series of experiments. Using the archival research methodology, they first obtained videos from YouTube and Google videos of company representatives rendering a public apology after a corporate transgression and coded for normative (expression of sadness) and deviant (expression of happiness like smiling) affect. When these representatives smiled during an apology, their company stock performed poorly in the days after the apology, and this effect lasted for three months. This effect was further exaggerated if the representative was at a higher position like a CEO compared to a lower ranking individual. In a series of follow-up studies using online experimental manipulations, a causal relationship was observed between the facial emotional expression of the apologizer and public perception of his organization. Such online experiments, conducted post-facto because of the availability of rich multimedia archival records, provide important insights on how seemingly subtle variation in visual content might influence organizational leadership perceptions and performance.

Online Attention Checks and Engagement Mechanisms

Given that most Web-based experiments are self-administered without the physical presence of an experimenter, there is a strong possibility that virtual participants may not be fully attentive to instructional tasks and may drop out. While this may be true of other data collection modes also, the fact that the virtual subjects could be at home, office, with natural distractors around, compounds the problem in Web-based experiments, not to mention that web-surfing—that is hopping from one Website to another in a casual, distracted manner, is common in online world. The Web platform, again offers a distinct advantage; in that, it allows for certain screening and training mechanisms that helps deal with this problem—more effectively than is possible in paper-pencil tasks or in physical laboratories.

Instructional manipulation checks (Oppenheimer et al., 2009) are increasingly being used as a screening mechanism. These refer to questions that, if the participant read only partially or carelessly, would fail giving the right answer (e.g., a lengthy cover story may end with a sentence, “irrespective of the questions asked below,

answer them with the word ‘note’”; participants may then be asked “How many times do you eat in a day?”). Whereas most researchers have been discarding or excluding the participants who fail the test (see Berinsky et al., 2014 for a review), in hard to reach populations, this could cause a problem. Also, those who fail the attention check could be correlated with other characteristics (e.g. age, education level); therefore, excluding the sample might compromise with the representativeness of the sample. A more favoured strategy is to ‘train’ the subjects: respondents who fail the initial screening are repeatedly asked the same question till they pass. Oppenheimer et al. (2009) report that the trained sample is not different on outcomes variables from the sample that passed the test. Such a training is not possible in offline modes.

Ethical Considerations

Experimental research on the Internet can pose ethical challenges similar, as well as different from the those associated with conventional experimental research. Both American Psychological Association (see Kraut et al., 2004) and British Psychological Association as well as IRB training modules have established extensive guidelines on conducting research on the Internet. However, these need to keep up with the fast pace at which technology and Web-based communication channels—potential tools for research—are emerging. For example, Kramer et al.’s (2014) research on emotional contagion in Facebook raised serious concerns about the practice of informed consent procedures in Web-based research (Flick, 2016).

The physical absence of the experimenter may also have both benefits and drawbacks from the ethical viewpoint. One of the major benefits is a reduced sense of the perceived pressure to complete the experiment even when voluntary withdrawal is allowed; in a Web-based study, the participants experience a greater degree of freedom to withdraw from the ongoing study (Nosek et al., 2002). On the other hand, the absence of the experimenter could have negative ethical implications, inadequate debriefing especially where participation could end involuntarily due to technical issues, including broken Internet connection, power cut, or program error. This is particularly problematic in research where deception is used. For example, in experiments conducted on cyber-ostracism across countries, several participants quit the online study without subsequent debriefing. Their comments indicated potential distress with their experience (Williams et al., 2000). Strategies to counteract such problems include obtaining an email address in the beginning (if anonymity is not a concern) and providing a list of engaging FAQs to address the anticipated concerns and having the researcher available in a chat room following the participants to address their questions directly (Nosek et al., 2002).

Is the privacy of the participant protected adequately in a Web-based experiment? There may be a better chance of protecting the identity of a participant in a Web-based study as the experimenter or anyone in the research team is not having direct access to the person who is responding to these questions. Although it assumed that Internet safeguards privacy, there are potential risks during all stages

of the research process, including data collection, storage, and communication. For example, Internet Protocol (IP) address, which is a unique identification number assigned to every computer connected to the Internet, can be traced quite easily and subsequently the identity of the participant as well. To counteract this, there are online research service providers like survey tool builder, Qualtrics, which offer researchers the option to get data without the IP address to protect the privacy and confidentiality of the participants. Also, implementation of Secure Server Line (SSL), an encryption technology, can prevent this theft of data as the information encoded is meaningless in transit. Hence, as technology is evolving, so are ways for ethical conduct of Web-based research. Web-based experiments—conducted at small and medium scale—can actually aid in the process by artificially simulating the theoretical possibilities of tomorrow, thereby preparing the researchers and policy makers for ethical concerns inherent in a virtual world.

Challenges and the Way Ahead

We recommended the use of Web-based experiments for OB research. The strength of the method is also its limitation: the digital divide might exclude populations that are not users of Web-based technologies from being potential participants. The method, yes, is seriously limited in such circumstances, but within the scope of the OB research, conventionally done, mostly with corporate and non-corporate employees, the tool has immense potential use. Moreover, with increased use of smart phones, there is a likelihood that the digital divide would be bridged, providing researchers opportunities to reach out to populations of theoretical interest.

The future of this methodology lies in harnessing the technological advancements such as AI, chatbots, real-time translations, and multimedia user-interface to design experiments that simulate the current realities as well as conceivable realities of tomorrow. For example, e-leadership (Avolio et al., 2014) exercised in a digital borderless workplace might require a different set of talents and skills than have traditionally been studied in the leadership literature. Similarly, online hiring procedures, such as the recruitment Website, can affect prospective job seekers' impression of the organization (Braddy et al., 2008). Further inquiry on such topics can be facilitated with the use of Web-based experiments.

In using Web-based experimental techniques, a potential concern is how generalizable are the findings from the virtual to the 'real world'. The findings, derived from Web experiments, provide more direct insights on computer-mediated behaviour, but the theoretical rationale would make them generalizable to the offline world as well, as do the conclusions of the representative articles we summarized in the paper. Future research utilizing converging findings from lab and online experiments can further test the assumption.

Conclusion

The chapter discussed the use of Web-based experimental techniques that have become increasingly common in basic social psychological research, but are not being extensively used in OB research and pedagogy. The contexts for this discussion were two interrelated observations: experimental research has ‘fallen out of favour’ in OB research and pedagogy, and that the modern-day organizational landscape because of its scale and scope of operations is consequential to matters of social, political, and public policy relevance. Taking example of the online version of the ‘small world problem’ and the ‘implicit association test’—the relevance of Web-based experimental tools was highlighted. A primer on the procedural aspects of this tool for enthusiastic OB researchers willing to try out this tool was presented.

Present-day organizational settings are not limited to physical space. Discussions and research on organizational issues such as telecommuting or flexible workplace, the influence of social media, workers in a gig economy, leadership in the digital era, the inter-generational workforce in modern organizations were already on the rise, and the 2020 pandemic has amplified and intensified the conversations in both industry and academia. Such topics can potentially be addressed with much greater granularity and causal precision with academic experimental research that operates with a pre-defined sample size and predictive power than what other methodologies allow for. Not to talk of issues of social relevance such as susceptibility to fake news, virtual bullying, and online persuasion which could easily become interwoven with topics in organizational behaviour as the world becomes more virtual and screen-driven. Policymakers and corporate leaders, drawing upon such experimental research, can be better informed about the conditions that result in favourable or unfavourable outcomes warranting prediction, control, and intervention in a timely manner, so unabashed real-life behavioural experimentation in digitally connected world does not take us by surprise.

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