Just recently, *The American Statistician* ([http://amstat.tandfonline.com/](http://amstat.tandfonline.com/)) presented a policy statement regarding the use of the p-value and statistical significance after the field of science had experienced a barrage of criticism in the literature over replicability and the use/misuse of the p-value. This statement was provided by *The American Statistician* to: “shed light on an aspect of our field that is too often misunderstood and misused in the broader research community, and, in the process, provide the community a service” (Wasserstein & Lazar, 2016, p. 3).

This information is important to comprehend regardless of your position within your organization/institution and regardless of one being identified as a leader or titled as a manager or consultant. People at all levels, collectively and independently, make decisions that are often based on emotions rather than on research and data. Worst yet, many decisions are made by those who do
not necessarily understand what the outcomes from research mean. Chalmers (2013) highlighted the point: “What is needed in science is not just facts but relevant facts” (p. 25). I would take this important statement one step further by saying that decisions need to be based on relevant facts and a clear understanding of how these relevant facts relate to the problem and how decisions based on this understanding will effect those impacted by the decision. To this point, reporting significance from any research endeavor (academic or organizational) should be done correctly. The following statements from *The American Statistician* attempts to help in this ‘understanding’ phase.

*The American Statistician* provided the following Principles in their statement:

1. P-values can indicate how incompatible the data are with a specified statistical model.
2. P-values do not measure the probability that the studied hypothesis is true, or the probability that the data were produced by random chance alone.
3. Scientific conclusions and business or policy should not be based only on whether a p-value passes a specific threshold.
4. Proper inference requires full reporting and transparency.
5. A p-value, or statistical significance, does not measure the size of an effect or the importance of a result.
6. By itself, a p-value does not provide a good measure of evidence regarding a model or hypothesis (Wasserstein & Lazar, 2016, pp. 8-11).

In many statistical analyses the researcher provides a proposed model that is to be tested, based on theory and experiences with the field. This model is then operationalized and data is collected, then analyzed. The results from the analysis reflect whether the data collected match the proposed model, or if there is a mismatch. The p-value is just one indicator identifying whether a model is supported by the data or not. There are multiple other methods available for testing models above and beyond just reporting a p-value.

A hypothesis cannot, and I find myself continuously reminding students of this critical point, be true or proven – only supported. In addition, a significant finding does not, in any means, indicate that the sample was conducted using a random sample. Analyses are blind to how the data was collected; random, quasi-random, convenience sample, etc... A hypothesis only reports on whether the proposed statement is reflected/supported by the data that was collected in relation to the specified model/theory. How the data is collected should be transparent following acceptable methodologies. However, regardless of whether the correct data collection techniques were followed, or not, hypothesis testing can still be performed. This places a more holistic view of the research methods and practices from the start to the end in order to indicate that a particular study is credibly/valid.

Inference making requires multiple research studies to further support the findings from a single study. One study alone cannot provide strong support for any inference. This is a problem that we often face when conducting research in organizations. There are often limited studies available within an organization in order to compare results to, however research results in the literature should be provided to support research findings – even in small organizational studies.

A p-value, a statistically significant result, a measure of practical significance, and confidence intervals, together and collectively give the researchers the tools to make a stronger and scientifically
supported inference. Making an inference based solely on a p-value can be erroneous and could have detrimental impacts to those involved, especially if policies are made or altered based on these ill-supported inferences.

Lastly, a p-value does not support causation. Causation can only be fully supported using purely random research procedures in experimentally controlled settings where one variable is manipulated at a time. The collective body of research on one specific construct, for example employee engagement, could be synthesized into a large research study using a meta-analysis technique. This research method could provide further support for inference making, but it still falls short when trying to make causal statements.

All-in-all, research conducted in organizations and in the social sciences requires a long-term process in order to begin uncovering the true meaning behind the problems that we face today, as a society. This reiterates the importance in knowing the literature (what has been done previously) and following acceptable methodologies, before making inferences that could effect policies in the workplace. In short, decisions should be supported by relevant facts through valid research practices. Taleb (2010) summarized this point in the following: “We are the empirical decision makers who hold that uncertainty is our discipline, and that understanding how to act under conditions of incomplete information is the highest and most urgent human pursuit” (p. 57).

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