

## THE WAGES OF SIN: THE PROFESSIONAL CULTURE OF SCIENCE

The crisis of reproducibility arises at the nuts-and-bolts level from the technical mishandling of data and statistics. Uncontrolled researcher freedom and a lack of openness enable scientific malfeasance or the innocent commission of serious methodological mistakes. At the highest level, however, the crisis of reproducibility also derives from science’s professional culture, which provides incentives to handle statistics and data sloppily and to replace rigorous research techniques with a results-oriented framework. The two most dangerous aspects of this professional culture are *the premium on positive results* and *groupthink*.

### The Premium on Positive Results

Modern science’s professional culture prizes positive results, and offers relatively few rewards to those who fail to find statistically significant relationships in their data. It also esteems apparently groundbreaking results far more than attempts to replicate earlier research. Ph.D.s, grant funding, publications, promotions, lateral moves to more prestigious universities, professional esteem, public attention—they all depend upon positive results that seem to reveal something new. A scientist who tries to build his career on checking old findings or publishing negative results isn’t likely to get very far. Scientists therefore steer away from replication studies, and they often can’t help looking for ways to turn negative results into positive ones. If those ways can’t be found, the negative results go into the file drawer.

Common sense says as much to any casual observer of modern science, but a growing body of research has documented the extent of the problem. As far back as 1987, a study of the medical literature on clinical trials showed a publication bias toward positive results.<sup>87</sup> Later studies provided further evidence that the phenomenon affects an extraordinarily wide range of fields, including the social sciences generally,<sup>88</sup> climate science,<sup>89</sup> psychology,<sup>90</sup> sociology,<sup>91</sup> research on drug education,<sup>92</sup> research on informational technology in education,<sup>93</sup> research on “mindfulness-based mental health interventions,”<sup>94</sup> and even dentistry.<sup>95</sup>

### Groupthink

Public knowledge about the pressure to publish is fairly widespread. The effects of *groupthink* on scientific research are less widely known, less obvious, and far more insidious.

Academic psychologist Irving Janis invented the concept of groupthink—“a psychological drive for consensus at any cost that suppresses dissent and appraisal of alternatives in cohesive decision making groups.”<sup>96</sup> Ironically, groupthink afflicts academics themselves, and contributes significantly to science’s crisis of reproducibility. Groupthink inhibits attempts to reproduce results that provide evidence for what scientists want to believe, since replication studies can undermine congenial conclusions. When a result appears to confirm its professional audience’s preconceptions, no one wants to go back and double-check whether it’s correct.

An entire academic discipline can succumb to groupthink, and create a professional consensus with a strong tendency to reinforce itself, reject results that question its foundations, and dismiss dissenters as troublemakers and cranks.<sup>97</sup> Examples of groupthink can be found throughout the history of science. A generation of obstetricians ignored Ignaz Semmelweis' call for them to wash their hands before delivering babies.<sup>98</sup> Groupthink also contributed to the consensus among nutritionists that saturated fats cause heart disease, and to their refusal to consider the possibility that sugar was the real culprit.<sup>99</sup>

Some of the groupthink afflicting scientific research is political. Numerous studies have shown that the majority of academics are liberals and progressives, with relatively few moderates and scarcely any conservatives among their ranks.<sup>100</sup> Social psychologist Jonathan Haidt made this point vividly at the Society for Personality and Social Psychology's annual conference in 2011, when he asked the audience to indicate their political affiliations.

*[Haidt began] by asking how many considered themselves politically liberal. A sea of hands appeared, and Dr. Haidt estimated that liberals made up 80 percent of the 1,000 psychologists in the ballroom. When he asked for centrists and libertarians, he spotted fewer than three dozen hands. And then, when he asked for conservatives, he counted a grand total of three.<sup>101</sup>*

The Heterodox Academy, which Haidt helped found in 2015, argues that the overwhelming political homogeneity of academics has created groupthink that distorts academic research.<sup>102</sup> Scientists readily accept results that confirm liberal political arguments,<sup>103</sup> and frequently reject contrary results out of hand. Political groupthink particularly affects some fields with obvious political implications, such as social psychology<sup>104</sup> and climate science.<sup>105</sup> Climatologist Judith Curry testified before Congress in 2017 about the pervasiveness of political groupthink in her field:

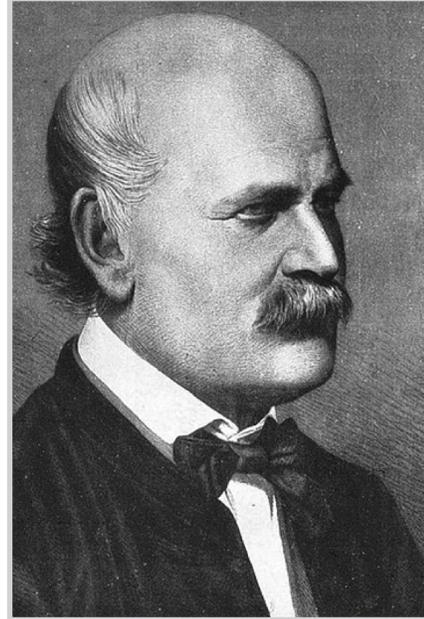


Figure 16: Ignaz Semmelweis

*Scientists readily accept results that confirm liberal political arguments, and frequently reject contrary results out of hand.*

*The politicization of climate science has contaminated academic climate research and the institutions that support climate research, so that individual scientists and institutions have become activists and advocates for emissions reductions policies. Scientists with a perspective that is not consistent with the consensus are at best marginalized (difficult to obtain funding and get papers published by ‘gatekeeping’ journal editors) or at worst ostracized by labels of ‘denier’ or ‘heretic.’<sup>306</sup>*

But politicized groupthink can bias scientific and social-scientific research in any field that acquires political coloration.

Like-minded academics’ ability to define their own discipline by controlling publication, tenure, and promotions exacerbates groupthink. These practices silence and purge dissenters, and force scientists who wish to be members of a field to give “correct” answers to certain questions. The scientists who remain in the field no longer realize that they are participating in groupthink, because they have excluded any peers who could tell them so.