



## Eighteenth-century German empirical psychology and the historiography of scientific objectivity

Andreas Rydberg

To cite this article: Andreas Rydberg (2022) Eighteenth-century German empirical psychology and the historiography of scientific objectivity, *History of European Ideas*, 48:7, 980-997, DOI: [10.1080/01916599.2022.2077403](https://doi.org/10.1080/01916599.2022.2077403)

To link to this article: <https://doi.org/10.1080/01916599.2022.2077403>



© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 19 May 2022.



Submit your article to this journal [↗](#)



Article views: 256



View related articles [↗](#)



View Crossmark data [↗](#)

# Eighteenth-century German empirical psychology and the historiography of scientific objectivity

Andreas Rydberg 

Department of History of Science and Ideas, Uppsala University, Uppsala, Sweden

## ABSTRACT

This article contributes to the historiography of scientific objectivity as well as to the broader attempt to historicize basic epistemic categories by examining the case of empirical psychology in eighteenth-century Germany. From the time when the philosopher Christian Wolff first presented empirical psychology in the late 1720s until Kantian philosophers elaborated on the topic towards the end of the century, the discourse hinged on discussions of how to obtain scientific knowledge of the soul. Whereas the work of Wolff and his followers reflected established epistemic techniques for accomplishing this, from the early 1770s philosophers highlighted a new category of difficulties connected to the development of a systematic method of psychological self-observations. These difficulties, I argue, both complement and complicate the picture of how the subject became an obstacle to knowledge first in the mid-nineteenth century.

## KEYWORDS

Objectivity; subjectivity; epistemic techniques; empirical psychology; eighteenth-century Germany; history of psychology

## 1. Introduction

The pioneering empirical psychology developed by Christian Wolff and his followers in the first half of the eighteenth century evinces a broad spectrum of epistemically different yet established techniques for reaching truth through scientific demonstration, observation and experimentation. From the early 1770s, however, Kantian philosophers highlighted a new category of difficulties arising from the attempt to make the soul the object of systematic self-observations. As both observing subject and object of observation, the soul presented a constant stream of perceptions without clearly distinguishable parts, making the task extraordinarily challenging. Their concern over these difficulties as well as the proposed solutions, I argue, complicate the scholarly discussion of scientific objectivity.

In the seminal book *Objectivity*, Lorraine Daston and Peter Galison argue that the modern concept of objectivity as ‘knowledge unmarked by prejudice or skill, fantasy or judgment, wishing or striving’ originated first in the mid-nineteenth century.<sup>1</sup>

Starting in the mid-nineteenth century, men of science began to fret openly about a new kind of obstacle to knowledge: themselves. Their fear was that the subjective self was prone to prettify, idealize, and, in the worst case, regularize observations to fit theoretical expectations: to see what it hoped to see.<sup>2</sup>

While acknowledging that epistemological worries did indeed exist before this point, they claim that they ‘were about the variability of nature, rather than the projections of the naturalist.’<sup>3</sup> That is, when early modern natural philosophers forced new facts of nature by using technologies

**CONTACT** Andreas Rydberg  [andreas.rydberg@idehist.uu.se](mailto:andreas.rydberg@idehist.uu.se)

© 2022 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group  
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

such as microscopes and air-pumps, backed up by epistemic techniques such as various forms of documentation and witnessing, they compensated for the variability of nature rather than for their own subjectivity.

Daston and Galison's study has been widely praised but also criticized. While some scholars have argued that subjectivity became a problem first in the early twentieth century, others have claimed that Francis Bacon addressed the matter in his famous discussion of the four idols in the early seventeenth century.<sup>4</sup> Yet others have instead warned against using the modern concept of objectivity as a yardstick against which previous discourses can be measured.<sup>5</sup> The present article both engages with and qualifies these historiographies. On the one hand, it sympathizes with the contextualist approach to objectivity, and particularly with Daston and Galison's analysis of objectivity as a largely post-Kantian invention. On the other hand, it shows that some of the very key elements associated with the modern concept of objectivity were already articulated within the context of empirical psychology in the second half of the eighteenth century. Facing the challenge of how to conduct systematic self-observations of the soul, these philosophers stressed the observing subject as a new kind of obstacle that called for extraordinary epistemic measures.

## 2. Experience in Wolff's empirical psychology

The case of empirical psychology reflects some of the most fundamental epistemic processes and transformations of the early modern period. In the philosophy of Christian Wolff and his followers, the concept of experience, formulated quite conventionally for their time, played an important role in shaping this new area of inquiry, which Wolff himself appears to have first proposed in the 1720s.

Christian Wolff came to Halle to take up a professorship at the newly founded university in 1706.<sup>6</sup> After a slow start he became both a prolific writer and a popular lecturer. From the early 1710s he produced a number of works in German, and then from the late 1720s in Latin, covering nearly every part of philosophy. Drawing on Descartes and Leibniz, Wolff envisioned an all-encompassing system united by a universal method whereby all scientific knowledge would derive from demonstrations grounded in clear and distinct concepts, definitions and propositions.<sup>7</sup> As we will see, the role of experience in this system was to provide indubitable empirical propositions.

At the core of Wolff's concept of experience was perception (*perceptio*, *Empfindung*), in the sense of an awareness of that which is present. Experience (*experientia*, *Erfahrung*), in turn, was defined as that which is recognized by attending to perception. In the early but highly influential *German Logic* (*Vernünfftige Gedancken von den Kräften des menschlichen Verstandes*, 1713) Wolff thus remarked that

[w]e experience everything that we recognize when we pay attention to our perceptions. That is, I see that when a light is lit everything around me becomes visible; that the poured-out water makes the table wet; that the flame ignites the paper and so on. All such knowledge is called experience.<sup>8</sup>

Later on, in the *Latin Logic* (*Philosophia rationalis sive logica*, 1728), Wolff also referred to this knowledge as historical knowledge (*cognitio historica*).

Knowledge of those things that are and occur either in the material world or in immaterial substances is called history. For example, historical knowledge is possessed by him who knows from experience that the sun rises in the morning and sets in the evening, that at the beginning of spring the buds of trees blossom forth, that animals are propagated by generation, that we desire nothing except under the aspect of good.<sup>9</sup>

These definitions of experience (*experientia*, *Erfahrung*, *cognitio historica*) were not Wolff's own original inventions but reflected the Aristotelian-scholastic notion of experience (*empeiria*, *experientia*) as the result of many perceptions accumulated and stored in memory.<sup>10</sup> Although all experience thus ultimately fell back on individual perceptions, the scientific use of experience did not require actual acts of observation. Instead, and as the historian of science Peter Dear has pointed out, experience typically took the form of universal and often evidently true statements of how

things are and behave in nature.<sup>11</sup> Statements such as ‘heavy bodies fall’ or ‘plants need water and air’ were thus universally and evidently true by virtue of numerous perceptions recorded over time, or, in some cases, by being warranted by weighty authorities. This epistemic logic of experience was pervasive in Wolff’s philosophy. Take, for example, a passage from the *German Logic*: ‘I once made the definition: everything that makes the surrounding things visible is a light. Now, I find from experience: the moon makes everything around me visible. Thus I conclude: the moon is a light.’<sup>12</sup> The example illustrates the epistemic function of the universal and evidently true proposition: since everyone would immediately recognize it as evidently and universally true there was no point in making or referring to particular perceptions.

Wolff’s Aristotelian-scholastic concept of experience also operated within his psychology.<sup>13</sup> In Wolff’s system, psychology referred to the part of metaphysics that dealt with the human soul. Wolff distinguished between knowledge of the soul from experience and from reason already in the *German Metaphysics* (*Vernünfftige Gedancken von Gott, der Welt und der Seele des Menschen*, 1720). In the *Latin Logic* the division crystalized with the introduction of the terms ‘empirical psychology’ and ‘rational psychology’; a few years later *Empirical Psychology* (*Psychologia empirica*, 1732) appeared, followed by *Rational Psychology* (*Psychologia rationalis*, 1734).<sup>14</sup> In the prolegomena to the two latter, Wolff emphasized that empirical psychology ‘is the science that establishes principles through experience’ whereas rational psychology ‘is the science of whatever is possible through the human mind.’<sup>15</sup> So much for the distinction itself, but what did it actually mean to establish principles from experience, and how should one proceed to do so? The answer is simple: empirical psychology operated in exactly the same way as most other empirical sciences; that is, by forming empirical propositions regarding the universally and evidently true and then using these propositions to draw conclusions and make demonstrations. In *Psychologia empirica* Wolff thus remarked that that ‘[n]o one could be astonished that we declare such things that are obvious to everyone, and that no one would call into doubt’ because in the end all demonstrations must proceed from what is assumed and ‘those things that are assumed must be either evident, or clear through themselves, which have either already been demonstrated before, or can be granted without examination.’<sup>16</sup> Moreover, since perception signified awareness of the soul and its own states as well as of material things in nature, experience was a matter of attending to perceptions regardless of their internal or external origins. Consequently, there was also no epistemological difference between empirical propositions concerning natural objects and those concerning the soul. Wolff’s demonstration of human existence illustrates the point. Before making the actual demonstration, Wolff asserted that the human being is conscious of itself and things outside itself. ‘We experience through every movement that we are conscious of ourselves and other things that exist outside us. There is no need of anything but attention to our perceptions, in order to be sure of this.’<sup>17</sup> Wolff here uses the kind of universal and evidently true statement that lay at the very core of the Aristotelian-scholastic understanding of experience. With this empirical proposition Wolff proceeded to the actual demonstration. ‘Whatever being is conscious of itself and of other things outside itself through action, it exists. And we are conscious of ourselves and of other things outside ourselves. Thus we exist.’<sup>18</sup> Here empirical psychology operates by paying attention to perceptions accumulated in memory, or in other words, by consulting what we know with certainty from experience and turning this into a general statement that can be used to establish further principles. Thus in Wolff’s empirical psychology, observing the soul is unproblematic, since all experience is derived from attention to perception regardless of the actual object of perception.

If Wolff applied the Aristotelian-scholastic conception of experience in all empirical sciences, including empirical psychology, he also drew on what can be referred to as *experimental experience*.<sup>19</sup> Accordingly, as new technologies such as telescopes, microscopes and air-pumps gave access to new and hitherto unknown phenomena, the problem became how to establish the truth of that which was normally not accessible and therefore not evidently true, and that, moreover, often seemed to challenge established truths. As Steven Shapin and Simon Schaffer have shown in

their seminal study of Robert Boyle's experiments with the air-pump, the solution became to combine material technologies (the actual machines) with literary and social technologies for observation, documentation and communication of facts.<sup>20</sup> Typically, these technologies involved rigorous note-taking and documentation, the use of reliable witnesses preferably from the upper classes, several replications of one and the same experiment, and *virtual witnessing* in the sense of literary descriptions of experiments so detailed that the reader could almost see the experiment being conducted.<sup>21</sup> Whereas the Aristotelian-scholastic experience thus took the form of universal and often evidently true statements of how things generally behave in nature, the experimental experience typically described specific events. As Dear has pointedly remarked, 'the new scientific experience could not be *evident*, but it could provide *evidence*.'<sup>22</sup> Wolff also adopted the epistemic logic of the experimental experience by distinguishing between common and secret historical knowledge (*cognitio historica communis & arcana*).

While some facts of nature are hidden (§20), others are so apparent (§1) that they require only attention and, of course, some acumen. The hidden facts must be brought to light by skilled investigators, and even then they are not known unless reason gives its assistance to the senses. As a result we distinguish between common and secret historical knowledge.<sup>23</sup>

The distinction between common and secret historical knowledge corresponded with that between observations (*observatio*) and experiments (*experimentum*). 'Observation is experience, that is centred around the facts of nature, obtained without our intervention. Experiment is experience, that is centred around the facts of nature, which cannot be obtained without our intervention.'<sup>24</sup> In Wolff's day, the concept of *experiment* as observations requiring some form of intervention was firmly established and commonly accepted within the natural philosophical community.<sup>25</sup> Wolff, who took over the teaching of experimental philosophy at the University of Halle from the physician Friedrich Hoffmann in 1709, became an enthusiastic teacher and writer of experimental treatises and was of course familiar with the Baconian definition of experiment.<sup>26</sup> In the *German Logic* he thus juxtaposed the propositions 'air is heavy' and 'poured-out water makes the table wet,' the point being that while the former requires singular observations (in form of experiments with the air-pump), the latter does not. Wolff not only acknowledged the experimental logic of adducing specific cases but also recommended his reader to 'carefully write down all his experiences, which do not occur daily, and diligently investigate them in all their circumstances' and to 'observe in detail all the conditions under which something happens, when we repeat our experiment at another time, or let it be repeated by another person.'<sup>27</sup> Again we see here how Wolff adopted the epistemic techniques for compensating for the variability of nature and ascertaining credibility.

There was no epistemic opposition between the evidently true experience and the experimental experience. On the contrary, the experimental experience provided a technique for arriving at empirical propositions regarding things that are hidden, not commonly accessible and therefore not evidently true. As regards empirical psychology, however, the rather obvious question becomes whether and how experiments were to be conducted on the soul. How could the soul and its states be intervened in and subjected to experimental operations? Wolff made a number of rather ambiguous remarks concerning these matters.<sup>28</sup> In the *Latin Logic* he thus stated that 'it is clear that empirical psychology corresponds to experimental physics, and thus pertains to experimental philosophy.'<sup>29</sup> In *Empirical Psychology* he drew directly on this passage when stating that 'we have mentioned elsewhere (*not. §. 111 Disc.praelim.*) that empirical psychology is similar to experimental physics. For it is also the case that experimental physics supplies principles for dogmatic physics.'<sup>30</sup> Later in the same work Wolff remarked that even though experimentation has hitherto been used almost exclusively by physicists,

[n]onetheless there is room for it in all forms of philosophy, even in natural theology. Because of this I remember that I have often urged that there is also an experimental natural Theology, experimental philosophy can indeed in every aspect be extended to all parts of philosophy.<sup>31</sup>

While it would perhaps be tempting to draw far-reaching conclusions regarding an early, Wolffian strand of experimental psychology, Wolff's own engagement with the topic was limited. His apparently generous application of experiments does suggest that he thought them usable within all parts of philosophy; that is, insofar as there was room for empirical propositions, these could be based on evidently true experience as well as experimental experience. The general observation that experiments could be used to derive truths within empirical psychology as well as within natural theology did not, however, mean that Wolff conceived of specific psychological or theological experiments. In fact, there seem to be no examples or suggestions of what such specific experiments would look like in his work.

### 3. Hagen's psychological experiments and Krüger's experimental psychology

One might argue that the reason why Wolff did not propose any specifically psychological experiments was that they were simply not yet conceivable, and that the possibility of doing so arose only as experimental psychology emerged as a discipline in the second half of the nineteenth century. This, however, was far from the case, as the work of Georg Friedrich Hagen, a Wolffian philosopher who specialized in mathematics, makes clear.<sup>32</sup> In 1734 Hagen published the voluminous *Philosophical Meditations on the Mathematical Method* (*Meditationes philosophicae de methodo mathematica*).<sup>33</sup> As a part of the overall project of providing a comprehensive survey of the mathematical method, he also elaborated on experiments. Drawing on the commonly established definition, he distinguished between observations and experiments on the basis of whether they required intervention or not.<sup>34</sup> Moving beyond Wolff's general remarks, Hagen then described some specific psychological experiments (*experimentum psychologica*).

Another class of experiments is the one that in simple things expounds transformations produced through a voluntary act and is called psychological. Such an experiment is the case if someone wants to frighten a person and depicts various evils that will soon threaten him and observes the effects of these conversations and whether he is inclined to fear or not.<sup>35</sup>

Here Hagen envisioned observing the effects of interventions in the natural course of events of the soul. That the idea of such experiments was something of a special interest for Hagen is suggested by the fact that he devoted a separate shorter treatise to them, entitled *Program for the Measure of the Intellectual Powers* (*Programma de mensurandis viribus intellectus*, 1734).<sup>36</sup> In this work Hagen gave several examples of psychological experiments, the most elaborate of which depicted the measurement of the intellectual powers of two young boys.

Thus carry out this examination: any unknown fact should be narrated to both boys, with all the circumstances that are to be attended to in history, such as proper names, dates, natural sequence, etc. And when asked, has anything of the previously told information been learned? If not, retell the story for them both until everything has been committed to memory. Repeat this until the whole fact has been thoroughly known, and it will be possible to determine who possess the largest intellectual powers and who has the highest ratio of attention. The measure of the intellectual powers is given here by means of the speed of activity and the number of individual acts accomplished: the smaller the number of repetitions, the greater the speed. This experiment has to be repeated several times before the measure of the two boys can be determined.<sup>37</sup>

Applying experimental logic in the case of the soul, Hagen proposes an experiment that one would otherwise not expect to find until the second half of the nineteenth century. Although we cannot exclude the possibility that he had shared or even invented it in collaboration with Wolff, there are no indications that he did, or that Wolff ever developed anything like it. From the mere existence of Hagen's experiments we can, however, draw a number of conclusions. First, this kind of psychological experiment was conceivable already in the first half of the eighteenth century. Second, although we cannot know whether Hagen ever conducted this particular experiment, there can hardly be any doubt that he constructed it as practically feasible. Third, when doing so he applied the logic of the experimental experience on the case of the soul by finding ways of intervening and observing behavioural effects.

That Hagen's category of psychological experiments was not commonly established is suggested not only by the lack of other examples but also by the ways in which the topic was discussed by other philosophers. A revealing example is the Wolffian philosopher Johann Gottlob Krüger. Although inspired by Wolff, Krüger was first of all a physician who had studied under Hoffmann and who wrote prolifically on medicine and natural philosophy in the 1740s.<sup>38</sup> In the opening paragraph of his *Attempt at an Experimental Psychology* (*Versuch einer Experimental-Seelenlehre*, 1756), Krüger made a remarkable statement regarding experiments (Experimente) on the soul.

One would maybe take it for a mere joke if I were to say that I have taken on the task of showing how one can know the soul through experiments. Experiment, one would say, can only be conducted on bodies. Would one really bring the soul under the air-pump, observing its gestalt through the magnifying glass, measuring its powers? This thought is so obvious that I think it would occur to most people who would face these pages.<sup>39</sup>

Krüger's rhetorical remark shows that he was well aware of the experimental logic, and apparently unaware of the kind of solution that Hagen had proposed. It also suggests that he expected others to share this view of the absurdity of conducting experiments on the soul. Elaborating further on the problem, Krüger argued that such a reaction arises from an overly narrow concept of experiment. 'It is nevertheless mistaken, and the mistake is that one assumes that no other instruments can be used to conduct experiments on the soul than those that are used in the instrument chamber of the natural philosopher'<sup>40</sup> Following an apparently similar line of thought to Hagen's, Krüger argued that it was clearly possible to obtain knowledge of the soul by conducting experiments on the body. However, when it came to the question of how these experiments would work, they turned out to be physiological and therefore morally dubious.

You want to open rational human skulls in order to discover the seat of their reason, you want to cut their brains into pieces to experience where the memory has its seat, you want to pierce the flesh and the periosteum so that they can tell you if they feel anything in these parts, you want to tear the heart out of their bodies and pierce it with needles and ask them if they feel anything.<sup>41</sup>

Having on moral grounds rejected the option of intervening by opening people's skulls and observing the effects on their behaviour, Krüger then dismissed experiments on criminals on the same grounds. Experimenting on animals would probably yield few if any useful results. Ultimately, Krüger's solution was to turn to numerous medical cases described in medical treatises and also in literature.

Thus, except that one can conduct many experiments on animals, the observations of the medical science, made in all times, provide circumstances where the soul, through extraordinary changes of the body, is placed in such extraordinary and rare states that they quite reasonably can be regarded as experiments conducted on the soul.<sup>42</sup>

The turn to medical cases was not a retreat to an obscure subcategory of experience, but reflected a move towards the medical branch of the Aristotelian-scholastic experience. Although medicine relied on actual perceptions and observations, perhaps more than any other science, these were typically turned into medical examples or cases accumulated, collected and categorized not only in memory but also in extensive catalogues referred to as *historiae*, *observationes* or *curationes*.<sup>43</sup> In medical practice these were then used to identify diseases, their causes and possible cures. Hoffmann thus suggested that 'in medical practice experience derives most abundantly from the observations of diseases, and from more accurate histories and cures.'<sup>44</sup> Krüger, who had studied under Hoffmann, was of course familiar with this common form of medical experience. What he did in the *Experimental Psychology*, however, was to indicate that in some examples or cases, nature itself had already intervened to produce an experiment.<sup>45</sup>

Taken together, Hagen's psychological experiments and Krüger's experimental psychology reflect different epistemic logics and techniques. Whereas Wolff had left open the question of what specifically psychological experiments would look like, Hagen constructed a kind of psychological experiment that is strikingly modern. Following the experimental logic, the problem of

intervention was solved by making behavioural interventions and observing the effects. Krüger, in turn, was well aware of the experimental logic, but did not consider the possibility of behavioural intervention. Instead, he conceived surgical intervention as an alternative. Having dismissed this on ethical grounds, he instead emphasized extraordinary medical cases in which the intervention had, so to speak, already been made by nature.

Situated in the context of the Aristotelian-scholastic experience, empirical knowledge of the soul was not more problematic than any other kind of knowledge. After all, what access could be more direct and what knowledge more evidently true than that of one's own soul and its states? Approached from the experimental perspective, however, the question became how, as Krüger put it, to 'bring the soul under the air-pump.' As we have seen there was not one but several solutions, ranging from behavioural and surgical intervention to extraordinary cases where manipulation by nature itself revealed hidden knowledge of the soul. What is striking in all these attempts, however, is the lack of problematisation of the subject or subjectivity as an obstacle to knowledge. Instead, epistemic techniques were developed and used to compensate for the variability of nature and, in this case, for the extraordinary complexity of the soul as an object of experimental study.

#### 4. Self-observation and the subject-object relation of empirical psychology

The vibrant late eighteenth-century discussion of empirical psychology must be understood, to a considerable degree, within the context of the Kantian philosophy. As a part of his critical project, Kant notoriously denied that psychology can be a science in the strict sense.<sup>46</sup> While he rejected rational psychology outright, on the basis that it failed to live up to the criteria of apodictic certainty, empirical psychology nevertheless qualified as a science in the less strict sense of being a systematic fact-collecting discipline. As such it resembled chemistry, but was less scientific because of the inability to quantify and apply mathematics to its findings. As Kant famously put it in the *Metaphysical Foundations of Natural Science* (*Metaphysische Anfangsgründe der Naturwissenschaft*, 1786),

[T]he empirical doctrine of the soul can also never approach chemistry even as a systematic art of analysis or experimental doctrine, for in it the manifold of inner observation can be separated only by mere division in thought, and cannot then be held separate and recombined at will ... , and even observation by itself already changes and displaces the state of the observed object. Therefore, the empirical doctrine of the soul can never become anything more than an historical doctrine of nature, and, as such, a natural doctrine of inner sense which is as systematic as possible, that is, a natural description of the soul, but never a science of the soul, nor even, indeed, an experimental psychological doctrine.<sup>47</sup>

The salient point here is not the denigration of empirical psychology as such, but rather the methodological claims. First, Kant assumes that empirical psychology derives its facts from inner observation, and that this method lacks the normal observational precision to control, circumscribe and distinguish objects. Second, and as a consequence of the first, since empirical psychology lacks this precision, it is not possible to conduct experiments and to turn psychology into an experimental science. In other words, whereas Hagen, Krüger and many others explored various, more or less creative ways of meeting the requirements of scientific experiments, Kant rejected such a project altogether. Kant's verdict carried weight, and as a consequence, attempts to construct psychological experiments or even an experimental psychology were abandoned and replaced by a new kind of expansive and progressive discourse on self-observation (*Beobachtung/Selbstbeobachtung*).<sup>48</sup>

Christian Gottfried Schütz was a philosopher, writer, literary critic, and early defender of the Kantian philosophy.<sup>49</sup> In 1771 Schütz published a translation of Charles Bonnet's *Analytical Essay on the Faculties of the Soul* (*Essai analytique sur les facultés de l'âme*, 1760), to which he added an appendix containing a critical commentary entitled *Reflections on the Various Methods of Psychology* (*Betrachtungen über die verschiedenen Methoden der Psychologie*).<sup>50</sup> In the text Schütz used the metaphor of the theatre to spotlight a problem that came to define the discussion of self-observation in empirical psychology for the rest of the century. 'The spectacle presented by the human soul is so varied, so composed; and who is now the spectator of it? She herself is both an

actor and a spectator; a circumstance which causes the greatest difficulty in psychology.<sup>51</sup> The dilemma led Schütz to distinguish three main classes of difficulties or obstacles to knowledge.

Some derive from the soul itself, insofar as it undertakes to observe itself, to occupy its powers of thought with itself, since its natural direction leads it more to that which is outside of it. Others are to be derived from the soul in so far as it is the object of observation; and still others arise finally from the manner in which one pursues these examinations.<sup>52</sup>

The first major class of methodological difficulties concerned the observing subject (betrachtende Subject): the mind is less apt to observe itself since it becomes exhausted by focusing on internal rather than external things, since some states such as sleep or rage either render impossible or heavily disturb observation, and since the soul is itself a stream of successive and constantly changing states of which many are obscure and illusive.<sup>53</sup> The second category concerned difficulties connected to the soul as an object of observation (Gegenstand der Untersuchung). The problems that Schütz highlighted here were similar: ‘the soul resembles a fast-flowing stream that always seems to stay the same, and yet is always changing.’<sup>54</sup> Being in constant flux, observed states might suddenly transform or disappear or interfere with and interrupt or even corrupt the observations themselves. The third category of difficulties had to do with the choice of method. Schütz distinguished an empirical, an analytical and a synthetic method (drawing conclusions from observations, cases based on experience and general principles, respectively), each of which had its own strengths and weaknesses.<sup>55</sup> Of these Schütz advocated the empirical, which was the most certain but also the slowest in terms of progress.

Schütz also provided a number of guidelines for surmounting the difficulties of self-observation. Thus he stressed that it is not enough to make a few cursory observations; rather, it is necessary ‘that one shows long and continuous attentiveness, that one is not carried away by what one believes oneself to perceive, and particularly that one is not hampered by the constant persistence of foreign conceptions.’<sup>56</sup> Towards the end of the treatise, Schütz further emphasized that

one must collect a great number of individual observations before one can deduce a certain result from them, and never forget that the incidents which one observes are individual cases, from which the general can be inferred only with great care and caution.<sup>57</sup>

While numerous observations are required, they sometimes create contradictory patterns where ‘the apparent difference can only be derived from a change in point of view.’<sup>58</sup> For this reason, one must pay attention to all the circumstances of the observed phenomenon in order to distinguish the defining features from mere accidental appearances. One must also be cautious ‘not to pass over accidental manifestations however small they may appear.’<sup>59</sup> Even the smallest details might turn out to be crucial for understanding the observed phenomenon.

Schütz’s methodological discourse predates much of what would lie implicit in Kant’s remarks on empirical psychology. First, the possibility and nature of psychological experiments had been replaced by a methodological discussion of self-observation. Second, given the rejection or ignorance of experiments, one might expect that Schütz would fall back on the evidently true experience, which, after all, structured almost all previous attempts to scientifically know the soul from experience. On the contrary, while ignoring the experimental situation as such, Schütz nevertheless adopted its core feature: the singular observation. The epistemic logic of the difficulties, rules and modes of procedure that Schütz prescribed was that of methodologically securing the accumulation of knowledge through singular observations. Third, while Schütz’s warnings and exhortations were in line with the experimental logic of compensating for the variability of nature, he also explicitly distinguished a specific category of difficulties and strategies connected to the observing subject rather than the object. In taking this step, he was not alone.

These concerns were also present in the work of Ferdinand Ueberwasser, a Kantian philosopher and teacher specializing in psychology.<sup>60</sup> In 1787 he published a textbook for the study of empirical psychology at the university of Münster – *Instructions for the Regular Study of Empirical Psychology*

(*Anweisungen zum regelmäßigen Studium der Empirische Psychologie*) – which included an extensive discussion of psychological method.<sup>61</sup> Ueberwasser divided empirical psychology into a ‘merely empirical’ fact-accumulating part and a systematic ‘scientific’ part.<sup>62</sup> Although Ueberwasser did not systematically distinguish between difficulties connected to the observing subject and the observed object, the problems he raised had much in common with those discussed by Schütz. Principal among them was that ‘the soul here is not, as in the physical observations, mere observer: it is the effective and in its own effects at the same time the observing subject.’<sup>63</sup> This, in turn, gave rise to a number of problems relating to the fact that the soul is perceived as an inner, immaterial, constantly changing stream in which parts, beginnings and ends cannot be clearly discriminated.<sup>64</sup> The complex nature of the soul as an object of study places very high demands on the observing subject. The observer should therefore engage in exercise and training through which ‘the spirit of observation of the researcher is sharpened.’<sup>65</sup> More specifically, he must learn both how to focus, discern and distinguish impressions, and how to shut out disturbances. Ueberwasser also recommended ‘frequent repetition of the same observation under both similar and different circumstances.’<sup>66</sup> These observations were then to be compiled into ‘an exact record of what has been observed for further use’ and a thorough survey of the complete results, where ‘that which is still not determined is sought out, and where new questions are asked which are then to be answered from experience.’<sup>67</sup>

Carl Christian Erhard Schmid’s extensive *Introduction to Empirical Psychology (Einleitung zur Empirischen Psychologie, 1791)* provides one further example.<sup>68</sup> Not only was Schmid a prominent Kantian philosopher, but his methodological discussion of empirical psychology was by far the most extensive. Schmid argued that empirical psychology requires data received from self-observation, observation of other persons and history and ‘a certain form or ordering of this data, in which the essence of a science consists.’<sup>69</sup> He also distinguished between *empirical* (a posteriori, fact collecting and systematizing), *rational* (a priori but nevertheless relying on experience) and *transcendental* (purely a priori) psychology.<sup>70</sup>

When it comes to the empirical method, Schmid discussed extensively *what* and *how* to observe.<sup>71</sup> In contrast to Schütz and Ueberwasser, he advocated the observation of not only inner states but also physical constitutions and behaviours and their relation to the inner states, and even intellectual products such as an individual’s writings. Concerning modes of observation, Schmid stressed that one can either observe synthetically, by focusing ‘on knowledge of the peculiarities of individual people,’ or analytically, by concentrating on ‘human nature and its diversity in general.’<sup>72</sup> Whereas the former typically relied on observation of other people, the latter operated through self-observation. When discussing self-observation Schmid highlighted many of the problems and difficulties that had already been discussed by his predecessors (Schmid recommended the reading of both Schütz and Ueberwasser).<sup>73</sup> In a similar vein as Schütz, he also distinguished between difficulties connected to the object and to the subject. The soul is difficult to study due to ‘quantity,’ ‘manifold,’ ‘continuity,’ ‘incessant flow and change,’ ‘unclearness and obscureness,’ ‘imperceptible detail,’ ‘impossibility of a mathematical method,’ and finally, the ‘impossibility of real analysis and deliberate experiments.’<sup>74</sup> The second category of difficulties regarding the observing subject was shorter and included only four points: (1) some states such as unconsciousness or rage are hard to observe either since we simply don’t have access to them or since it is impossible to observe them in a focused and calm way; (2) ‘the act of observation itself changes the state of the mind, which is its object’; (3) when starting an observation one has already familiarized oneself with the object to the point where it becomes obscure and hard to distinguish; and (4) one’s own life experience, language and education obscure and make invisible ‘what emerges from the most inner and intrinsic disposition of the mind and the soul.’<sup>75</sup>

The classes of difficulties finally lead into a discussion of rules for how to observe: the observer shall, among other things, be ‘attentive to details,’ ‘not despise the ordinary and common,’ endeavour to make ‘complete and exact’ observations, use ‘analogies’ but not put these ‘in the place of real examination,’ and not mix up ‘immediate facts with explanations and opinions over these.’<sup>76</sup>

Schmid also emphasized that one must endeavour to avoid the negative influence that ‘common and personal prejudice’ have on observation, and that ‘no presumed result must stand in the way of the continuous observation or destroy its impartiality, but only give the spirit of observation new inspiration and new directions.’<sup>77</sup> Like previous authors, Schmid stressed the importance of ‘recording in writing one’s observations and compiling them in a well-prepared and organized psychological journal.’<sup>78</sup> Overall, Schmid followed a similar structure and line of argument to that of his predecessors but emphasized even more the importance of counteracting the preconceptions and prejudices of the subject.

To conclude, Schütz’s, Ueberwasser’s and Schmid’s discourses all follow the same pattern. First, assuming that self-observation does not allow for quantification and use of mathematics, the question of psychological experiments was considered moot. Second, having abandoned the experimental project, these authors nevertheless conceptualized self-observation in terms of the experimental logic of the singular observation rather than the commonly accessible and evidently true experience. For the Wolffians the challenge was not to make singular perceptions or observations, but to form clear and distinct conceptions, definitions and empirical propositions of those perceptions that were already stored in memory. To use experience within empirical psychology thus signified a cognitive operation that had little to do with actual observation. Although Hagen and Krüger proposed various forms of psychological experiments, none of them would have questioned that the bulk of empirical psychology relied on the kind of procedure that Wolff described. Schütz, Ueberwasser and Schmid would also not have objected to the Wolffian idea that the task was to form universal empirical propositions regarding the soul. When it comes to the production of such propositions, however, they adopted the logic of the singular observation. The difficulties that they raised regarding the soul as an object of study (its immaterial, inner, constantly changing nature, and the impossibility of clearly distinguishing its parts, beginnings and ends) and the epistemic techniques that they advocated (self-restraint and control during observation, with repetition and rigorous documentation) only made sense within this framework. While these difficulties and techniques are in line with what Daston and Galison have described as compensation for the variability of nature, they also highlighted the observing subject as a specific obstacle to knowledge.

## 5. The problematic subject and the history of objectivity

The problematization of the subject as a specific and distinct obstacle to knowledge in empirical psychology challenges some of the assumptions and claims made in the context of the recent historiographical discussion of objectivity. In *Objectivity in the Making: Francis Bacon and the Politics of Inquiry* Julie Robin Solomon criticizes Daston’s earlier works on objectivity and particularly the claim that subjectivity became a problem first in the mid-nineteenth century. Solomon argues that many of the features that Daston associates with modern objectivity did indeed figure in Bacon’s discourse on the four idols, already in the early seventeenth century.<sup>79</sup> A similar reading of Bacon’s discourse in terms of objectivity has been presented by Stephen Gaukroger, who simply uses the label ‘objectivity’ without addressing the historiographical challenges involved in such usage.<sup>80</sup> Perez Zagorin, in contrast, dismisses the search for a modern conception of objectivity in Bacon as anachronistic and doomed from the start. Bacon did pursue objectivity, but it was an early modern form of objectivity that must be understood on its own terms.<sup>81</sup> When it comes to Daston and Galison’s own argument, the reason why Bacon’s conception does not qualify as objectivity in the modern sense is that the latter is an essentially post-Kantian invention.<sup>82</sup> It was Kant who reversed the scholastic dichotomy between subjective and objective, thereby introducing the modern concept of mere subjective knowledge.<sup>83</sup> This extremely influential reversal was a precondition for the epistemic anxieties over subjectivity that came to preoccupy nineteenth-century scientists. Daston and Galison further argue that these worries were connected to the larger cultural context of the romantic movement, in that they took form as a reaction against what was perceived as an exaggerated and dangerous enthusiasm for subjectivity, an enthusiasm that could be restrained through the

cultivation of control, discipline, disinterestedness and an active will to willessness or passivity in relation to scientific truth.<sup>84</sup>

What is interesting in the case of empirical psychology is that the discourse on self-observation developed in the very intersection between this exaggerated literary and cultural interest in subjectivity and the Kantian philosophy.<sup>85</sup> Self-observation aimed at the exploration of the individual expression of the mind while at the same time requiring disinterested restraint on the part of the observer. Schütz, Ueberwasser and Schmid were well aware of the high demands placed on the self-observer, and their concerns can be divided into two major groups. First, there was the worry that external factors would disturb, interrupt or possibly distort the actual act of observation. To minimize this risk, it was necessary to cultivate a high degree of self-discipline, not only in relation to the act of observing but also in relation to the subjective desire to see what one wished to see. It was also important to conduct 'frequent repetition of the same observation both under similar and different circumstances.'<sup>86</sup> Second, there was a worry that the observing subject would be misled by more general prejudices – personal experiences, attitudes and values – connected to the subject as such rather than being restricted to the act of observation. To counter this risk, Ueberwasser stressed the importance of attaining 'a calm soul that is free from all prejudices, from all preference and expectation, that it will be one way or another, as much as possible, and not a soul that seeks truth.'<sup>87</sup> Schmid, in turn, stressed

freedom from preconceptions about the human soul; they may arise from a philosophical, or theological, older or newer school, or from the school of common life and the imagined but one-sided experience, from self-inflicted fates and their influence on the mood of the mind.<sup>88</sup>

Accordingly he recommended 'a general doubt that drives free, rigorous and versatile investigation.'<sup>89</sup> Schmid further emphasized, as noted above, that one must 'meticulously prevent' and 'defuse' 'the influence that common and personal prejudice, or inclinations and passions have on observation.'<sup>90</sup> The epistemic worries and solutions that these cases exemplify cannot be relegated to a distant past or a cultural context radically different from that of the modern concept of objectivity. Although belonging to a specific discipline, they nonetheless emerged from the same historical contexts and processes that drove the emergence of this idea, of which they might be seen as early indicators.

## 6. Conclusion

The thorny epistemic issues presented by eighteenth-century German empirical psychology reflect some of the most fundamental epistemic categories and techniques of early modern philosophy and science. When Wolff introduced empirical psychology in the early eighteenth century, it was shaped almost entirely in relation to the Aristotelian-scholastic episteme. Empirical knowledge of the soul was here a matter of producing universal and often evidently true statements of how the soul is constituted and works. Although Wolff was an enthusiastic proponent of the new experimental philosophy, his remarks on the use of experiments in empirical psychology were notoriously ambiguous and lacking in concrete examples. Yet this would not stop his followers from pursuing the question and trying to find ways to satisfy the experimental criteria of intervention in the course of nature. As I have shown throughout this article, however, there was little consensus on how to accomplish this. While Hagen suggested behavioural trials, Krüger considered surgery before eventually turning to extraordinary medical cases, in which nature itself made the intervention.

The project of experimental psychology and psychological experiments remained a peripheral undertaking, curtailed by Kant's devastating critique of any attempt to conduct experiments on the soul. When Kant launched his critique, however, experimental psychology was already well on its way to being replaced by an empirical psychology based on self-observations. This new strand abandoned psychological experiments but adopted the epistemic logic of the experimental experience; that is, the idea that truth must be secured through the accumulation of many singular

observations. Taking this stance, the main challenge became the fact that the soul is simultaneously observing subject and object of observation. Along with this comes the particular problem that the soul is a constantly changing immaterial object without clearly distinguishable parts. Instead of prompting a retreat from the epistemic techniques of the experimental experience, these predicaments instead seemed to call for their particularly rigorous application. Self-observations thus required extraordinary discipline and control when it came to the act of observation as well as robust measures regarding the accumulation and documentation of numerous observations.

The discourse on self-observation clearly displays some of the same attitudes that were connected to the modern concept of objectivity. Proponents feared both that the mind would interfere with, distort and corrupt the actual act of observation, and that various and more general forms of cultural, social and personal prejudice would make observers prone to look for what they wished to see. On the one hand, epistemic worries and solutions were driven by the peculiar subject-object relation of empirical psychology. Since the soul occupied both positions, the problem of the variability of nature also became the problem of the variability and prejudice of the subject. That the subject emerged as a new obstacle to knowledge must thus partly be understood as a direct consequence of this predicament. On the other hand, the problematic subject must also be understood in relation to the larger contexts of both the Kantian redefinition of the subject-object dichotomy and the broader intellectual and cultural turn to the subject and subjectivity. Subjectivity was often presented here as something to be affirmed, particularly in literature, while also posing a threat that could only be averted through the cultivation of a disciplined scientific self. Against this background, the epistemic concerns addressed in the context of self-observations can be seen as an early, distinctive chapter in the larger history of modern scientific objectivity.

## Notes

1. Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007), 17. In addition to criticizing traditional approaches to objectivity as an ahistorical category, Daston and Galison also complicate earlier attempts to identify scientific objectivity with early modern natural and experimental philosophy.
2. Daston and Galison, *Objectivity*, 34.
3. *Ibid.*, 35.
4. Theodore M. Porter, 'The Objective Self', *Victorian Studies* 50, no. 4 (2008): 641–7; Stephen Gaukroger, 'The Autonomy of Natural Philosophy: From Truth to Impartiality', in *The Science of Nature in the Seventeenth Century: Patterns of Change in Early Modern Natural Philosophy*, ed. John Andrew Schuster and Peter R. Anstey (Dordrecht: Springer, 2005), 131–63; Julie Robin Solomon, *Objectivity in the Making: Francis Bacon and the Politics of Inquiry* (Baltimore: Johns Hopkins University Press, 1998).
5. See particularly Perez Zagorin, 'Francis Bacon's Concept of Objectivity and the Idols of the Mind', *British Journal for the History of Science* 34 (2001): 379–93. For a recent recontextualization of objectivity as an aspect of the early modern *cultura animi* see Sorana Corneanu, *Regimens of the Mind: Boyle, Locke, and the Early Modern Cultura Animi Tradition* (Chicago: University of Chicago Press, 2011), 109–13. Although some of the studies referred to here and in the previous note came before *Objectivity*, they tend to engage critically with Daston's earlier works on mechanical objectivity.
6. Christian Wolff, 'Christian Wolffs eigene Lebensbeschreibung herausgegeben mit einer Abhandlung über Wolff von Heinrich Wuttke', in *Christian Wolff Biographie*, ed. Hans Werner Arndt, Christian Wolff Gesammelte Werke, Abt. 1, Deutsche Schriften, Bd. 10 (Hildesheim: Olms, 1980), 146. For a recent biography of Wolff, see Hans-Joachim Kertscher, 'Er brachte Licht und Ordnung in die Welt': *Christian Wolff - eine Biographie* (Halle: Mitteldeutscher Verlag, 2018).
7. The literature on Wolff's philosophy and science is vast. See, for instance, Juan Ignacio Gómez Tutor, *Die wissenschaftliche methode bei Christian Wolff*, Christian Wolff Gesammelte Werke, Abt. 3, Materialien und Dokumente Bd. 90 (Hildesheim: Olms, 2004); Luigi Cataldi, *Christian Wolff und das System des klassischen Rationalismus: die philosophia experimentalis universalis/Christian Wolff e il sistema del razionalismo classico: la philosophia experimentalis universalis*, Christian Wolff Gesammelte Werke, Abt. 3, Materialien und Dokumente Bd. 62 (Hildesheim: Olms, 2001); Werner Schneiders, ed., *Christian Wolff, 1679–1754: Interpretationen zu seiner Philosophie und deren Wirkung mit einer Bibliographie der Wolff-Literatur*, Studien zum achtzehnten Jahrhundert 4 (Hamburg: Felix Meiner, 1983). See also Charles A. Corr, 'Christian Wolff and Leibniz', *Journal of the History of Ideas* 36, no. 2 (1975): 241–62.

8. Christian Wolff, *Vernünfftige Gedancken von den Kräften des menschlichen Verstandes* (Halle, 1713), 54, §. 1. All translations are my own except when references to published translations are included in the footnotes.
9. Christian Wolff, *Preliminary Discourse on Philosophy in General*, trans. Richard J. Blackwell (Indianapolis: Bobbs-Merrill, 1963), 3; Christian Wolff, *Philosophia rationalis sive logica, methodo scientifica pertractata* (Frankfurt & Leipzig, 1728), 2, §. 3.
10. Aristotle, 'Posterior Analytics', in *The Complete Works of Aristotle: The Revised Oxford Translation. One Volume Digital Edition* (Princeton, NJ: Princeton University Press, 1995), 2.19.
11. Peter Dear, *Discipline and Experience: The Mathematical Way in the Scientific Revolution* (Chicago: The University of Chicago Press, 1995), 22; Peter Dear, 'The Meanings of Experience', in *The Cambridge History of Science Volume 3: Early Modern Science*, ed. Katharine Park and Lorraine Daston (Cambridge: Cambridge University Press, 2006), 106–31. See also Peter Dear, *The Intelligibility of Nature: How Science Makes Sense of the World* (Chicago: The University of Chicago Press, 2006).
12. Wolff, *Vernünfftige Gedancken von den Kräften des menschlichen Verstandes*, 84, §. 1.
13. The literature on Wolff's psychology is extensive. See, for instance, Oliver-Pierre Rudolph and Jean-François Goubet, eds., *Die Psychologie Christian Wolffs: systematische und historische Untersuchungen*, Halesche Beiträge zur europäischen Aufklärung 22 (Tübingen: Niemeyer, 2004).
14. Wolff, *Philosophia rationalis sive logica*, 51–51, §§. 111–12; Wolff, *Preliminary Discourse*, 56–7; Christian Wolff, *Psychologia empirica, methodo scientifica pertractata*, Christian Wolff Gesammelte Werke, Abt. 2, Lateinische Schriften, Bd. 5 (Hildesheim: Olms, 1968); Christian Wolff, *Psychologia rationalis, methodo scientifica pertractata*, ed. Jean Ecole, Christian Wolff Gesammelte Werke, Abt. 2, Lateinische Schriften, Bd. 6 (Hildesheim: Olms, 1994).
15. Christian Wolff, 'Christian Wolff's Prolegomena to Empirical and Rational Psychology: Translation and Commentary', trans. Robert J. Richards, *Proceedings of the American Philosophical Society* 124, no. 3 (1980): 230, 234. See also: Wolff, *Psychologia empirica*, 1968, 1, §. 1; Wolff, *Psychologia rationalis*, 1, §. 1.
16. Wolff, *Psychologia empirica*, 1968, 9, §. 11.
17. *Ibid.*, 9, §. 11.
18. *Ibid.*, 12, §. 16. See also Christian Wolff, *Vernünfftige Gedancken von Gott, der Welt und der Seele des Menschen, auch allen Dingen überhaupt*, ed. Charles A. Corr, Christian Wolff Gesammelte Werke, 1. Abt., Deutsche Schriften, Bd. 2.1 (Hildesheim: Olms, 1983), 4.
19. Dear, *Discipline and Experience*; Dear, 'The Meanings of Experience'.
20. Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985), 25–79.
21. Shapin and Schaffer, *Leviathan and the Air-Pump*, 60.
22. Dear, *Discipline and Experience*, 25.
23. Wolff, *Preliminary Discourse*, 12; Wolff, *Philosophia rationalis sive logica*, 10, §. 21.
24. Christian Wolff, *Psychologia empirica methodo scientifica pertractata* (Frankfurt & Leipzig, 1732), 357, §. 456.
25. Lorraine Daston, 'The Empire of Observation, 1600–1800', in *Histories of Scientific Observation*, ed. Lorraine Daston and Elizabeth Lunbeck (Chicago: The University of Chicago Press, 2011), 86. See also Katharine Park, 'Observation in the Margins, 500–1500', in *Histories of Scientific Observation*, ed. Lorraine Daston and Elizabeth Lunbeck (Chicago: The University of Chicago Press, 2011), 15–44; Gianna Pomata, 'Observation Rising: Birth of an Epistemic Genre, 1500–1650', in *Histories of Scientific Observation*, ed. Lorraine Daston and Elizabeth Lunbeck (Chicago: The University of Chicago Press, 2011), 45–80.
26. Wolff, 'Christian Wolffs eigene Lebensbeschreibung', 146. For Wolff's engagement with experimental philosophy, see Günter Mühlhfordt, 'Die organischen Naturwissenschaften in Wolffs empiriorationalistischer Enzyklopädistik', in *Nuovi studi sul pensiero di Christian Wolff*, ed. Sonia Carboncini and Luigi Cataldi Madonna, Christian Wolff Gesammelte Werke, Abt. 3, Materialien und Dokumente, Bd. 31 (Hildesheim: Olms, 1992), 77–106; Alberto Vanzo, 'Christian Wolff and Experimental Philosophy', in *Oxford Studies in Early Modern Philosophy, Volume VII*, ed. Daniel Garber and Donald Rutherford (Oxford University Press, 2015), 225–55.
27. Christian Wolff, *Vernünfftige Gedancken von den Kräften des menschlichen Verstandes und ihrem richtigen Gebrauche in Erkenntnis der Wahrheit*, ed. Hans Werner Arndt, Christian Wolff Gesammelte Werke, Abt. 1, Deutsche Schriften, Bd. 1 (Hildesheim: Olms, 1978), 187–8.
28. This article does not address the thoroughly explored Wolffian discourse on the measurability of the mind or *psychometrics*. Although it partly overlaps with that of psychological experiments, it is also a different and highly complex topic that reaches back to the Aristotelian and scholastic discussion of multitudes and magnitudes. For the scholarly discussion of psychometrics, see Thomas Sturm, 'Is There a Problem with Mathematical Psychology in the Eighteenth Century? A Fresh Look at Kant's Old Argument', *Journal of the History of the Behavioral Sciences* 32, no. 4 (2006): 353–77; Joel Michell, 'Psychophysics, Intensive Magnitudes, and the Psychometricians' Fallacy', *Studies in the History and Philosophy of Biological and Biomedical Sciences* 17 (2006): 414–32. For an analysis of Wolff's psychometrics in particular, see Wolf Feuerhahn, 'Die Wolffsche "Denkschulung" in der psychometrie', in *Christian Wolff und die europäische Aufklärung: Akten des*

1. *Internationalen Christian-Wolff-Kongresses, Halle (Saale), 4.-8. April 2004, Teil 5: Wolff und seine Schule, Wirkungen Wolffs, Wolff in Halle - Vertreibung und Rückkehr*, ed. Jürgen Stolzenberg and Oliver-Pierre Rudolph, Christian Wolff Gesammelte Werke, Abt. 3, Materialien und Dokumente, Bd. 105 (Hildesheim: Olms, 2007), 69–86; Wolf Feuerhahn, 'Die Wolffische Psychometrie', in *Die Psychologie Christian Wolffs: systematische und historische Untersuchungen*, ed. Oliver-Pierre Rudolph and Jean-François Goubet, Hallesche Beiträge zur europäischen Aufklärung 22 (Tübingen: Niemeyer, 2004), 227–36.
29. Wolff, *Preliminary Discourse*, 56; Christian Wolff, *Philosophia rationalis sive Logica: Pars I*, ed. Jean École, Christian Wolff Gesammelte Werke, Abt. 2, Lateinische Schriften, Bd. 1.1 (Hildesheim: Olms, 1983), 51.
30. Wolff, 'Christian Wolff's Prolegomena', 231–2; Wolff, *Psychologia empirica*, 1732, 3, §. 4.
31. Wolff, *Psychologia empirica*, 1732, 358, §. 459.
32. Michael Albrecht, 'Hagen, Gottlieb Friedrich (1710–69)', in *Dictionary of Eighteenth-Century German Philosophers*, ed. Heiner Klemme and Manfred Kuehn (London: Continuum, 2010).
33. Gottlieb Friedrich Hagen, *Meditationes philosophicae de methodo mathematica* (Nürnberg, 1734).
34. Hagen, *Meditationes philosophicae de methodo mathematica*, 114, 127.
35. Gottlieb Friedrich Hagen, *Meditationes philosophicae de methodo mathematica*, Christian Wolff Gesammelte Werke, Abt. 3, Materialien und Dokumente, Bd. 82 (Hildesheim: Olms, 2002), 132.
36. Gottlieb Friedrich Hagen, *Programma de mensurandis viribus intellectus* (Halle, 1734).
37. Hagen, *Programma de mensurandis viribus intellectus*, 4–5.
38. Thomas Sturm, 'Krüger, Johann Gottlob (1715–59)', in *Dictionary of Eighteenth-Century German Philosophers*, ed. Heiner Klemme and Manfred Kuehn (London: Continuum, 2010); Hans-Peter Nowitzki, *Der wohltemperierte Mensch: Aufklärungsanthropologien im Widerstreit*, Quellen und Forschungen zur Literatur- und Kulturgeschichte 25 (Berlin: De Gruyter, 2003).
39. Johann Gottlob Krüger, *Versuch einer Experimental-Seelenlehre* (Halle: Carl Herrmann Hemmerde, 1756), 1, §. 1.
40. Krüger, *Versuch einer Experimental-Seelenlehre*, 1, §. 1.
41. *Ibid.*, 18–19, §. 7.
42. *Ibid.*, 20, §. 7.
43. For a recent history of 'cases' in eighteenth-century Germany, see Robert Scott Leventhal, *Making the Case: Narrative Psychological Case Histories and the Invention of Individuality in Germany, 1750–1800* (Berlin: De Gruyter, 2019). For the epistemic function of cases in medicine, see Gianna Pomata, 'Sharing Cases: The Observations in Early Modern Medicine', *Early Science and Medicine* 15, no. 3 (2010): 193–236; Giana Pomata, 'Praxis Historialis: The Uses of Historia in Early Modern Medicine', in *Historia: Empiricism and Erudition in Early Modern Europe*, ed. Gianna Pomata and Nancy G. Siraisi (Cambridge, MA: MIT Press, 2005), 105–46; Mariacarla Gadebusch Bondio, 'Von der Vielfalt der Exempla in frühneuzeitlichen medizinischen Texten', in *Exempla medicorum: Die Ärzte und ihre Beispiele (14.-18. Jahrhundert)*, ed. Mariacarla Gadebusch Bondio and Thomas Ricklin, 26 (Firenze: Sismel, 2008), 129–70.
44. Friedrich Hoffmann, *Fundamenta Medicinae*, trans. Lester S. King (New York: Neale Watson Academic Publications, 1971), 5; Friedrich Hoffmann, *Fundamenta medicinae ex principiis naturae mechanicis in usum philiatrorum succincte proposita* (Halle, 1695), 2, §. 8. 'in praxi medicina ex observationibus morborum Historiis & Curationibus accuratioribus, experientia fluit uberrima'.
45. My interpretation thus differs from that of Carsten Zelle, who argues that Krüger abandoned experiments in favour of observations of cases. Carsten Zelle, 'Experiment, Experience and Observation in Eighteenth-Century Anthropology and Psychology – the Examples of Krüger's Experimentalseelenlehre and Moritz' *Erfahrungsseelenkunde*', *Orbis Litterarum* 56 (2001): 101. It is also worth noting that Krüger was far from alone in emphasizing the use of extraordinary cases. On the contrary, it was stressed by Johann Georg Sulzer in *Concise Conception of All Science* (*Kurzer Begriff aller Wissenschaften*, 1759), and in the early 1780s such cases came to form the very core of *Know Thyself; or, Journal of Empirical Psychology* (*Gnothi Seauton oder Magazin zur Erfahrungsseelenkunde*, 1783–93), by the literary critic and professor of art and linguistics Karl Philipp Moritz. Johann Georg Sulzer, *Kurzer Begriff aller Wissenschaften*, 2nd ed. (Leipzig, 1759), 159–60, §. 207. For a thorough scholarly analysis of such cases in eighteenth-century Germany, see Leventhal, *Making the Case*.
46. The scholarly discussion of Kant's remarks on psychology is vast and extends back to Kant's own time. As such it includes topics such as the scientific status and role of psychology and the limits of measurability, quantification and experimentation, as well as the possibility of a transcendental psychology. For the recent scholarly discussion, see Gary Hatfield, 'Empirical, Rational and Transcendental Psychology: Psychology as Science and as Philosophy', in *The Cambridge Companion to Kant and Modern Philosophy*, ed. Paul Guyer (Cambridge: Cambridge University Press, 2006), 200–27; Sturm, 'Is There a Problem with Mathematical Psychology in the Eighteenth Century? A Fresh Look at Kant's Old Argument'.
47. Immanuel Kant, 'Metaphysical Foundations of Natural Science', in *Theoretical Philosophy after 1781*, ed. Henry E. Allison, Peter Heath, and Gary C. Hatfield, The Cambridge Edition of the Works of Immanuel Kant in Translation (Cambridge: Cambridge University Press, 2002), 4:471.

48. This article does not claim to present an exhaustive account of this discussion, but selects three cases to illustrate the epistemic logic of this discourse. For a broad survey of other possible cases, see Fernando Vidal, *The Sciences of the Soul: The Early Modern Origins of Psychology*, trans. Saskia Brown (Chicago: University of Chicago Press, 2011).
49. Thomas Sturm, 'Schütz, Christian Gottfried', in *Dictionary of Eighteenth-Century German Philosophers*, ed. Heiner Klemme and Manfred Kuehn (London: Continuum, 2010).
50. As both Sturm and Vidal have pointed out, Schütz criticized Bonnet's method for being fictitious and lacking precision. When it comes to Schütz's discussion of the difficulties and possibilities of self-observation, however, the main references are to Cicero's discussion of the soul in *Tusculan Disputations*. Marcus Tullius Cicero, *Cicero in twenty eight volumes. 18: Tusculan disputations*, trans. J.E. King, The Loeb classical library 141 (Cambridge, MA: Harvard University Press, 2007), I,16, I,22, I,29, I,30. See also Thomas Sturm, 'Analytic and Synthetic Method in the Human Sciences: A Hope That Failed', in *Conflicting Values of Inquiry: Ideologies of Epistemology in Early Modern Europe*, ed. Tamás Demeter (Leiden: Brill, 2015), 275–305; Vidal, *The Sciences of the Soul*, 134–9.
51. Christian Gottfried Schütz, 'Betrachtungen über die verschiedenen Methoden der Psychologie', in *Herrn Karl Bonnets verschiedner Akademien Mitglieds Analytischer Versuch über die Seelenkräfte* (Bremen and Leipzig, 1771), 191–2.
52. Schütz, 'Betrachtungen über die verschiedenen Methoden der Psychologie', 192.
53. *Ibid.*, 193–9.
54. *Ibid.*, 203.
55. For a more detailed analysis, see Sturm, 'Analytic and Synthetic Method in the Human Sciences'.
56. Schütz, 'Betrachtungen über die verschiedenen Methoden der Psychologie', 198.
57. *Ibid.*, 264.
58. *Ibid.*, 265.
59. *Ibid.*, 265.
60. Frank Brosow, 'Ueberwasser, Ferdinand (1752–1812)', in *Dictionary of Eighteenth-Century German Philosophers*, ed. Heiner Klemme and Manfred Kuehn (London: Continuum, 2010).
61. Ferdinand Ueberwasser, *Anweisungen zum regelmäßigen Studium der empirischen Psychologie für die Candidaten der Philosophie zu Münster* (Münster: Friedrich Christian Theißing, 1787).
62. Ueberwasser, *Anweisungen zum regelmäßigen Studium*, 4.
63. *Ibid.*, 6.
64. *Ibid.*, 8–9.
65. *Ibid.*, 5.
66. *Ibid.*, 6.
67. *Ibid.*, 15.
68. Temilo van Zantwijk, 'Schmid, Carl Christian Erhard (1762–1812)', in *Dictionary of Eighteenth-Century German Philosophers*, ed. Heiner Klemme and Manfred Kuehn (London: Continuum, 2010).
69. Carl Christian Erhard Schmid, *Empirische Psychologie* (Jena, 1791), 15.
70. Schmid, *Empirische Psychologie*, 17–18.
71. *Ibid.*, 105–6.
72. *Ibid.*, 106–7.
73. *Ibid.*, 128, 140.
74. *Ibid.*, 110–14.
75. *Ibid.*, 115–18.
76. *Ibid.*, 120–5.
77. *Ibid.*, 122–3.
78. *Ibid.*, 124.
79. Solomon, *Objectivity in the Making*, 8–10.
80. Gaukroger, 'The Autonomy of Natural Philosophy. From Truth to Impartiality'.
81. Zagorin, 'Francis Bacon's Concept of Objectivity and the Idols of the Mind'.
82. Daston and Galison, *Objectivity*, 191–251.
83. For the scholastics, 'objective' meant being a representation or object of the unconscious, while 'subjective' meant having a real existence outside of consciousness. See: Daston and Galison, *Objectivity*, 206–7; Machiel Karskens, 'The Development of the Opposition Subjective Versus Objective in the 18th Century', *Archiv Für Begriffsgeschichte* 35 (1992): 214–56.
84. Daston and Galison, *Objectivity*, 201–3.
85. In Daston and Galison's analysis, concerns about subjectivity are seen primarily as something that emerged and shaped the debate in the nineteenth century. In the German context, however, there is ample research showing that the interest in subjectivity, as well as the worries it entailed, shaped the German debate already in the second half of the eighteenth century. See for instance: Leventhal, *Making the Case*; Alexander Košenina, *Karl Philipp Moritz: literarische Experimente auf dem Weg zum psychologischen Roman* (Hannover:

Wehrhahn, 2009); Cristina Fossaluzza, *Subjektiver Antisubjektivismus: Karl Philipp Moritz als Diagnostiker seiner Zeit* (Laatzten: Wehrhahn, 2006).

86. Ueberwasser, *Anweisungen zum regelmäßigen Studium*, 6.
87. Ueberwasser, *Anweisungen zum regelmäßigen Studium*, 5.
88. Schmid, *Empirische Psychologie*, 108–9.
89. *Ibid.*, 109.
90. *Ibid.*, 122.

## Acknowledgements

This work would not have been possible without valuable feedback from colleagues at the Department of History of Science and Ideas at Uppsala University. I also wish to thank two anonymous reviewers for valuable suggestions and criticism.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This study was supported by the Swedish Research Council (Ref: 2018-01187).

## ORCID

Andreas Rydberg  <http://orcid.org/0000-0002-6622-079X>

## Bibliography

- Albrecht, Michael. 'Hagen, Gottlieb Friedrich (1710–69).' In *Dictionary of Eighteenth-Century German Philosophers*, edited by Heiner Klemme and Manfred Kuehn. London: Continuum, 2010.
- Aristotle. 'Posterior Analytics.' In *The Complete Works of Aristotle: The Revised Oxford Translation. One Volume Digital Edition*. Princeton, NJ: Princeton University Press, 1995.
- Brosow, Frank. 'Ueberwasser, Ferdinand (1752–1812).' In *Dictionary of Eighteenth-Century German Philosophers*, edited by Heiner Klemme and Manfred Kuehn. London: Continuum, 2010.
- Cataldi, Luigi. *Christian Wolff und das System des klassischen Rationalismus: die philosophia experimentalis universalis/Christian Wolff e il sistema del razionalismo classico: la philosophia experimentalis universalis*. Christian Wolff Gesammelte Werke, Abt. 3, Materialien und Dokumente Bd. 62. Hildesheim: Olms, 2001.
- Cicero, Marcus Tullius. *Cicero in twenty eight volumes. 18: Tusculan disputations*. Translated by J. E. King. The Loeb classical library 141. Cambridge, MA: Harvard University Press, 2007.
- Corneanu, Sorana. *Regimens of the Mind: Boyle, Locke, and the Early Modern Cultura Animi Tradition*. Chicago: The University of Chicago Press, 2011.
- Corr, Charles A. 'Christian Wolff and Leibniz.' *Journal of the History of Ideas* 36, no. 2 (1975): 241–62.
- Daston, Lorraine. 'The Empire of Observation, 1600–1800.' In *Histories of Scientific Observation*, edited by Lorraine Daston and Elizabeth Lunbeck. Chicago: The University of Chicago Press, 2011.
- Daston, Lorraine, and Peter Galison. *Objectivity*. New York: Zone Books, 2007.
- Dear, Peter. *Discipline and Experience: The Mathematical Way in the Scientific Revolution*. Chicago: The University of Chicago Press, 1995.
- Dear, Peter. *The Intelligibility of Nature: How Science Makes Sense of the World*. Chicago: The University of Chicago Press, 2006.
- Dear, Peter. 'The Meanings of Experience.' In *The Cambridge History of Science Volume 3: Early Modern Science*, edited by Katharine Park and Lorraine Daston, 106–31. Cambridge: Cambridge University Press, 2006.
- Feuerhahn, Wolf. 'Die Wolffische Psychometrie.' In *Die Psychologie Christian Wolffs: systematische und historische Untersuchungen*, edited by Oliver-Pierre Rudolph and Jean-François Goubet, 227–36. Hallesche Beiträge zur europäischen Aufklärung 22. Tübingen: Niemeyer, 2004.
- François Goubet. 'Die Wolffsche 'Denkschulung' in der psychometrie.' In *Christian Wolff und die europäische Aufklärung: Akten des 1. Internationalen Christian-Wolff-Kongresses, Halle (Saale), 4.-8. April 2004, Teil 5: Wolff und seine Schule, Wirkungen Wolffs, Wolff in Halle – Vertreibung und Rückkehr*, edited by Jürgen

- Stolzenberg and Oliver-Pierre Rudolph, 69–86. *Christian Wolff Gesammelte Werke*, Abt. 3, Materialien und Dokumente, Bd. 105. Hildesheim: Olms, 2007.
- Fossaluzza, Cristina. *Subjektiver Antisubjektivismus: Karl Philipp Moritz als Diagnostiker seiner Zeit*. Laatzten: Wehrhahn, 2006.
- Gadebusch Bondio, Mariacarla. 'Von der Vielfalt der Exempla in frühneuzeitlichen medizinischen Texten.' In *Exempla medicorum: Die Ärzte und ihre Beispiele (14.-18. Jahrhundert)*, edited by Mariacarla Gadebusch Bondio and Thomas Ricklin, 129–70. 26. Firenze: Sismel, 2008.
- Gaukroger, Stephen. 'The Autonomy of Natural Philosophy. From Truth to Impartiality.' In *The Science of Nature in the Seventeenth Century: Patterns of Change in Early Modern Natural Philosophy*, edited by John Andrew Schuster and Peter R. Anstey, 131–63. Dordrecht: Springer, 2005.
- Gómez Tutor, Juan Ignacio. *Die wissenschaftliche methode bei Christian Wolff*. *Christian Wolff Gesammelte Werke*, Abt. 3, Materialien und Dokumente Bd. 90. Hildesheim: Olms, 2004.
- Hagen, Gottlieb Friedrich. *Meditationes philosophicae de methodo mathematica*. Nürnberg, 1734.
- Hagen, Gottlieb Friedrich. *Meditationes philosophicae de methodo mathematica*. *Christian Wolff Gesammelte Werke*, Abt. 3, Materialien und Dokumente, Bd. 82. Hildesheim: Olms, 2002.
- Hagen, Gottlieb Friedrich. *Programma de mensurandis viribus intellectus*. Halle, 1734.
- Hatfield, Gary. 'Empirical, Rational and Transcendental Psychology: Psychology as Science and as Philosophy.' In *The Cambridge Companion to Kant and Modern Philosophy*, edited by Paul Guyer, 200–227. Cambridge: Cambridge University Press, 2006.
- Hoffmann, Friedrich. *Fundamenta Medicinae*. Translated by Lester S. King. New York: Neale Watson Academic Publications, 1971.
- Hoffmann, Friedrich. *Fundamenta medicinae ex principiis naturae mechanicis in usum philiatrorum succincte propo-sita*. Halle, 1695.
- Kant, Immanuel. 'Metaphysical Foundations of Natural Science.' In *Theoretical Philosophy after 1781*, edited by Henry E. Allison, Peter Heath, and Gary C. Hatfield. The Cambridge Edition of the Works of Immanuel Kant in Translation. Cambridge: Cambridge University Press, 2002.
- Karskens, Machiel. 'The Development of the Opposition Subjective Versus Objective in the 18th Century.' *Archiv Für Begriffsgeschichte* 35 (1992): 214–56.
- Kertscher, Hans-Joachim. *'Er brachte Licht und Ordnung in die Welt': Christian Wolff – eine Biographie*. Halle: Mitteldeutscher Verlag, 2018.
- Kosenina, Alexander. *Karl Philipp Moritz: literarische Experimente auf dem Weg zum psychologischen Roman*. Hannover: Wehrhahn, 2009.
- Krüger, Johann Gottlob. *Versuch einer Experimental-Seelenlehre*. Halle: Carl Herrmann Hemmerde, 1756.
- Leventhal, Robert Scott. *Making the Case: Narrative Psychological Case Histories and the Invention of Individuality in Germany, 1750–1800*. Berlin: De Gruyter, 2019.
- Michell, Joel. 'Psychophysics, Intensive Magnitudes, and the Psychometricians' Fallacy.' *Studies in the History and Philosophy of Biological and Biomedical Sciences* 17 (2006): 414–32.
- Mühlpfordt, Günter. 'Die organischen Naturwissenschaften in Wolffs empiriorationalistischer Enzyklopädistik.' In *Nuovi studi sul pensiero di Christian Wolff*, edited by Sonia Carboncini and Luigi Cataldi Madonna, 77–106. *Christian Wolff Gesammelte Werke*, Abt. 3, Materialien und Dokumente, Bd. 31. Hildesheim: Olms, 1992.
- Nowitzki, Hans-Peter. *Der wohltemperierte Mensch: Aufklärungsanthropologien im Widerstreit*. Quellen und Forschungen zur Literatur- und Kulturgeschichte 25. Berlin: De Gruyter, 2003.
- Park, Katharine. 'Observation in the Margins, 500–1500.' In *Histories of Scientific Observation*, edited by Lorraine Daston and Elizabeth Lunbeck, 15–44. Chicago: The University of Chicago Press, 2011.
- Pomata, Gianna. 'Praxis Historialis: The Uses of Historia in Early Modern Medicine.' In *Historia: Empiricism and Erudition in Early Modern Europe*, edited by Gianna Pomata and Nancy G. Siraisi, 105–46. Cambridge, MA: MIT Press, 2005.
- Pomata, Gianna. 'Observation Rising: Birth of an Epistemic Genre, 1500–1650.' In *Histories of Scientific Observation*, edited by Lorraine Daston and Elizabeth Lunbeck, 45–80. Chicago: The University of Chicago Press, 2011.
- Pomata, Gianna. 'Sharing Cases: The Observations in Early Modern Medicine.' *Early Science and Medicine* 15, no. 3 (2010): 193–236.
- Porter, Theodore M. 'The Objective Self.' *Victorian Studies* 50, no. 4 (2008): 641–47.
- Rudolph, Oliver-Pierre, and Jean-François Goubet, eds. *Die Psychologie Christian Wolffs: systematische und historische Untersuchungen*. Halesche Beiträge zur europäischen Aufklärung 22. Tübingen: Niemeyer, 2004.
- Schmid, Carl Christian Erhard. *Empirische Psychologie*. Jena, 1791.
- Schneiders, Werner, ed. *Christian Wolff, 1679–1754: Interpretationen zu seiner Philosophie und deren Wirkung mit einer Bibliographie der Wolff-Literatur*. Studien zum achtzehnten Jahrhundert 4. Hamburg: Felix Meiner, 1983.
- Schütz, Christian Gottfried. 'Betrachtungen über die verschiedenen Methoden der Psychologie.' In *Herrn Karl Bonnets verschiedner Akademieen Mitglieds Analytischer Versuch über die Seelenkräfte*, 187–273. Bremen and Leipzig, 1771.

- Shapin, Steven, and Simon Schaffer. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press, 1985.
- Solomon, Julie Robin. *Objectivity in the Making: Francis Bacon and the Politics of Inquiry*. Baltimore: Johns Hopkins University Press, 1998.
- Sturm, Thomas. 'Analytic and Synthetic Method in the Human Sciences: A Hope That Failed.' In *Conflicting Values of Inquiry: Ideologies of Epistemology in Early Modern Europe*, edited by Tamás Demeter, 275–305. Leiden: Brill, 2015.
- Sturm, Thomas. 'Is There a Problem with Mathematical Psychology in the Eighteenth Century? A Fresh Look at Kant's Old Argument.' *Journal of the History of the Behavioral Sciences* 32, no. 4 (2006): 353–77.
- Sturm, Thomas. 'Krüger, Johann Gottlob (1715–59).' In *Dictionary of Eighteenth-Century German Philosophers*, edited by Heiner Klemme and Manfred Kuehn. Vol. 2. London: Continuum, 2010.
- Sturm, Thomas. 'Schütz, Christian Gottfried.' In *Dictionary of Eighteenth-Century German Philosophers*, edited by Heiner Klemme and Manfred Kuehn. London: Continuum, 2010.
- Sulzer, Johann Georg. *Kurzer Begriff aller Wissenschaften*. 2nd ed. Leipzig, 1759.
- Ueberwasser, Ferdinand. *Anweisungen zum regelmäßigen Studium der empirischen Psychologie für die Candidaten der Philosophie zu Münster*. Münster: Friedrich Christian Theißing, 1787.
- Vanzo, Alberto. 'Christian Wolff and Experimental Philosophy.' In *Oxford Studies in Early Modern Philosophy, Volume VII*, edited by Daniel Garber and Donald Rutherford, 225–55. Oxford University Press, 2015.
- Vidal, Fernando. *The Sciences of the Soul: The Early Modern Origins of Psychology*. Translated by Saskia Brown. Chicago: University of Chicago Press, 2011.
- Wolff, Christian. 'Christian Wolffs eigene Lebensbeschreibung herausgegeben mit einer Abhandlung über Wolff von Heinrich Wuttke.' In *Christian Wolff Biographie*, edited by Hans Werner Arndt. Christian Wolff Gesammelte Werke, Abt. 1, Deutsche Schriften, Bd. 10. Hildesheim: Olms, 1980.
- Wolff, Christian. 'Christian Wolff's Prolegomena to Empirical and Rational Psychology: Translation and Commentary.' Translated by Robert J. Richards. *Proceedings of the American Philosophical Society* 124, no. 3 (1980): 227–39.
- Wolff, Christian. *Philosophia rationalis sive logica, methodo scientifica pertractata*. Frankfurt & Leipzig, 1728.
- Wolff, Christian. *Philosophia rationalis sive Logica: Pars I*. Edited by Jean École. Christian Wolff Gesammelte Werke, Abt. 2, Lateinische Schriften, Bd. 1.1. Hildesheim: Olms, 1983.
- Wolff, Christian. *Preliminary Discourse on Philosophy in General*. Translated by Richard J. Blackwell. Indianapolis: Bobbs-Merril, 1963.
- Wolff, Christian. *Psychologia empirica methodo scientifica pertractata*. Frankfurt & Leipzig, 1732.
- Wolff, Christian. *Psychologia empirica, methodo scientifica pertractata*. Christian Wolff Gesammelte Werke, Abt. 2, Lateinische Schriften, Bd. 5. Hildesheim: Olms, 1968.
- Wolff, Christian. *Psychologia rationalis, methodo scientifica pertractata*. Edited by Jean École. Christian Wolff Gesammelte Werke, Abt. 2, Lateinische Schriften, Bd. 6. Hildesheim: Olms, 1994.
- Wolff, Christian. *Vernünfftige Gedancken von den Kräften des menschlichen Verstandes*. Halle, 1713.
- Wolff, Christian. *Vernünfftige Gedancken von den Kräften des menschlichen Verstandes und ihrem richtigen Gebrauche in Erkenntnis der Wahrheit*. Edited by Hans Werner Arndt. Christian Wolff Gesammelte Werke, Abt. 1, Deutsche Schriften, Bd. 1. Hildesheim: Olms, 1978.
- Wolff, Christian. *Vernünfftige Gedancken von Gott, der Welt und der Seele des Menschen, auch allen Dingen überhaupt*. Edited by Charles A. Corr. Christian Wolff Gesammelte Werke, 1. Abt., Deutsche Schriften, Bd. 2.1. Hildesheim: Olms, 1983.
- Zagorin, Perez. 'Francis Bacon's Concept of Objectivity and the Idols of the Mind.' *The British Journal for the History of Science* 34 (2001): 379–93.
- Zantwijk, Temilo van. 'Schmid, Carl Christian Erhard (1762–1812).' In *Dictionary of Eighteenth-Century German Philosophers*, edited by Heiner Klemme and Manfred Kuehn. London: Continuum, 2010.
- Zelle, Carsten. 'Experiment, Experience and Observation in Eighteenth-Century Anthropology and Psychology – the Examples of Krüger's Experimentalseelenlehre and Moritz' Erfahrungsseelenkunde.' *Orbis Litterarum* 56 (2001): 93–105.