Illustrative Psychological Data and Hypotheses for Bayesian Inequality Constrained Analysis of Variance

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2.1 Introduction

In this chapter, three datasets from existing psychological research programs will be introduced that allow for an investigation of differences between groups on a single outcome variable. The first dataset was gathered to study amnesia in people with Dissociative Identity Disorder. The second dataset was originally generated to study emotional reactivity and emotional regulation in children subjected to different kinds of social evaluation by peers. The third dataset was obtained from research on coping with loss that, among other purposes, was used to study gender differences in coping. These three datasets will be used in subsequent chapters to illustrate Bayesian inequality constrained analysis of variance. To set the stage for these illustrations, in the current chapter, we will provide background information for the three datasets and will introduce theories and corresponding hypotheses that can be tested with these datasets. Some of these hypotheses were (implicitly) formulated by the researchers who gathered the data. However, since the approach introduced in this book allows more flexibility (viz. construction of hypotheses using inequality constraints), additional hypotheses will be formulated. We will describe how traditional hypothesis testing could be used to evaluate these hypotheses. Limitations of more conventional approaches to hypothesis testing will also be addressed. In the chapters that follow, these hypotheses will be evaluated using Bayesian inequality constrained analysis of variance.

2.2 Amnesia in Dissociative Identity Disorder: The Investigation of a Controversy

In psychiatry and clinical psychology, the Diagnostic and Statistical Manual of Mental Disorders (DSM [1]) is probably the most frequently used system to
classify mental disorders. It includes specific criteria for dozens of disorders, subdivided into several categories among which are the categories of mood disorders, anxiety disorders, and personality disorders. There is a lot of controversy surrounding the system. Among other things, critics have noted that many of the disorders in DSM lack reliability and construct validity [40]. One of the most controversial disorders in the DSM is the Dissociative Identity Disorder (DID) – among the lay public also known as Multiple Personality Disorder. According to the last edition of the DSM, DID is defined as present when the person has at least two distinct identities or personality states that recurrently take control of the person’s behaviour and has an inability to remember important personal information that cannot be explained by ordinary forgetfulness [1].

The controversy surrounding DID basically comes down to the question if it is indeed possible that people can have two or more separable identities (so called “alters”), with currently dominant identities being amnesic for events experienced by the other identity. Some say that this is indeed possible, whereas others have questioned if this is indeed so (for a review see [20]). A lot of research has been conducted to study this topic. Yet, as with the disorder itself, much of this research has been criticized. For instance, some studies have simply asked one alter of a DID-patient if he/she remembered what was experienced by the other alter. Potentially problematic is that, say, subjective experience of amnesia does not necessarily reflects the objective presence of this phenomenon as present in people with, for instance, dementia or other organic mental disorders. To curb this problem, researchers have used implicit measures of amnesia that allow for an examination of amnesia without study participants being aware that amnesia is tested. Elegant examples of this approach are represented in several studies by Huntjens [16], who used experimental designs to answer the question if inter-identity amnesia reported by DID-patients represents true, objectively verifiable amnesia or is perhaps attributable to other processes. In the present book, one of the studies by Huntjens et al. [17] will be used for illustrative purposes in several chapters.

As a starting point of their study, Huntjens et al. [17] observed that it is still uncertain whether or not the amnesia of DID-patients is “real” amnesia, if it is iatrogenic (i.e., induced by therapists), or if it is caused by suggestive influence of media and cultures on suggestible individuals. Noticing limitations of extant studies on this topic, they felt it was timely to further examine the issue of symptom simulation in DID-patients. To this end, a group of DID-patients ($N_{\text{pat}} = 19$) and three control groups were subjected to a recognition task. In the first phase of this task, which was the learning episode, patients were subjected to part of the Wechsler Memory Scale-revised (i.e., the Logical Memory-story A and the Visual Reproduction subtests [39]); patients were told a brief story and they were shown several drawn figures after which they performed a recall test of both the story and the figures. Then, after a delay, patients were asked to switch to another alter that was subjected to the second phase of the task. In this phase, these other alters were subjected