CAUSAL EXPLANATIONS AND JUDGMENTS ABOUT
CHILDREN’S POTENTIALLY PROBLEMATIC BEHAVIORS

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by

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ABSTRACT OF DISSERTATION

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Abstract

Children with burgeoning psychological problems are not always correctly identified as having such problems, often do not receive necessary treatment at critical developmental periods, and subsequently suffer more serious dysfunction as adults (Garland et al., 2001; Miller, 1995; Yeh & Weisz, 2001). Why are children’s early warning-sign behaviors overlooked? Previous work has shown that lay people perceive severely disordered adult behaviors as less disordered and less in need of intervention when given a plausible causal explanation (Ahn et al., 2003; Kim & LoSavio, 2009). The current work asked whether parents and lay adults without children are similarly influenced by provided and self-generated explanations for children’s potentially problematic behaviors. The aims were threefold: (1) to examine the influence of explanations on judgments of potentially problematic child behaviors, (2) to assess whether the domain experience of parents influences problem category judgments, and lastly (3) to determine if self-generated explanations influence problem category judgments by increasing reasoners perceived understanding of the ambiguous child behaviors.

Experiments 1 and 2 addressed the first and second aims. Parents and adults without children were presented with vignettes depicting ambiguous (i.e., not clearly problematic) child behaviors, and were either provided with a congruent explanation that helped make sense of the behaviors, an incongruent explanation that did not help to make sense of the behaviors, or no explanation for the behaviors. Experiment 3 addressed the second and third aims. Parents and adults without children were presented with the same behavioral vignettes and were asked either to read the vignettes and generate an explanation for the behaviors that would help them to understand the behaviors better, or only to read the vignettes. In all three experiments, participants then judged the degree to which they perceived the behaviors to be problematic by
assessing a variety of clinically relevant factors that can be subsumed under the following: psychological normality/health, statistical commonness, socio-cultural effects. Additionally, Experiments 2 and 3 examined participants’ direct experience with the behaviors in question, asking whether experience with similar exemplars similarly influences problem category judgments. Critically, Experiment 3 also assessed whether people believed that the self-generated explanations made it easier or more difficult to understand the behaviors. Each self-generated explanation was separately rated for how plausible it was and how proportionate (in strength and valence) it was to the behaviors in question. An additional set of raters also coded each individual explanation for explanation type (i.e., internally versus externally controlled).

Across experiments, parents and adults without children were strongly influenced by explanations for each of the clinically relevant measures, such that behaviors that people thought to be well-explained were seen as less problematic overall than behaviors that people thought were either poorly explained or unexplained. Interestingly, although domain experience did not seem to influence problem category judgments, direct experience with similar exemplars was a significant predictor of judgments, such that the more prior experience a person had with the behaviors, the less problematic the behaviors seemed overall. Critically, how well people felt they understood the behaviors given the explanation was a strong predictor of their judgments about problem status, such that children’s behaviors were seen as less problematic to the degree that people felt they were well understood. In Experiment 3, the ratings of plausibility, proportionality, and explanation type as assessed by outsider reasoners had no influence on problem category judgments; again, only self-rated perceptions of understanding predicted problem status.
Taken together, these findings suggest that judgments of the problematic nature of ambiguous child behaviors are influenced both by provided and self-generated explanations to the degree that the explanations help increase perceived understanding of the behaviors, suggesting one potential reason why adults often do not recognize early signs of child psychological problems. Implications for cognitive theory and practical implications for identifying real developmental problems in children are discussed.
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Introduction

Consider the case of Cassie, a 6-year-old girl who recently started demanding to use a baby bottle again, insists on drinking all beverages out of a bottle at home and school, and upon waking up, shouts, “bottle, please!” We would probably expect Cassie’s parents, teacher, and indeed most people who encounter Cassie to wonder whether this kind of behavior is normal for a child and needs no special attention, or whether someone should be concerned that this behavior may indicate a current or future behavioral or developmental problem that requires intervention. As children develop, they are constantly changing and adapting to the world around them. For this reason, adults are frequently faced with the task of trying to attribute cause to children’s ever-changing behaviors (Miller, 1995). If a child expresses some unusual behavior over the course of development, such as in the case of Cassie, it is critical to the child’s development that adults (especially the parents and other caretakers of the child) make accurate judgments about whether the behavior is problematic, whether the behavior is likely to continue in the future, and also whether or not the behavior should be intervened upon. Ultimately, if a child’s warning-sign behaviors are misunderstood or ignored, this neglect can in some cases lead to more serious dysfunction later in life (Garland, Hough, McCabe, Yeh, Wood, & Aarons, 2001). On the other hand, it would not be desirable for adults to identify potential problems overzealously, seeing problems where none exist.

Studies investigating adults’ naive theories of child development have shown that adults generally have a limited understanding of what types of behaviors are normal for children (e.g., Furnham & Weir, 1996; Giummarra & Haslam, 2005; Yeh & Weisz, 2001). Furnham and Weir (1996) asked young adults to judge at what age children can perform certain behaviors (e.g., telling the time, understanding people’s simple jokes, cutting soft food with a knife). Very young
children (i.e., ages 2-4) were consistently mistakenly judged to be able to perform higher-level behaviors than was actually the case. Conversely, older children (i.e., ages 9-15) were consistently underestimated in their ability to perform complex behaviors.

Additionally, research on adult perceptions of children with psychological problems suggests that both parents and adults without children tend to show striking and systematic inaccuracies and biases in explaining the problematic behavior (Giummarra & Haslam, 2005; Mills & Rubin, 1990; Yeh & Weisz, 2001). In a questionnaire assessing lay adults’ understanding of child mental disorders, children who were presented as having a mental disorder with criteria taken directly from the Diagnostic and Statistical Manual-IV-Text Revision [DSM-IV-TR]; 4th Edition (American Psychiatric Association, 2000) were frequently erroneously perceived as being normal and not having a psychological disorder. Specifically, only one-third of the children described as having a mental disorder were seen as such (Giummarra & Haslam, 2005).

Moreover, Yeh and Weisz (2001) examined the level of agreement between parents and their children (who had been referred for treatment by either the parent or guardian) with regard to their specific behavioral problems. Both parents and their clinically referred children were asked to identify the behaviors for which the children needed psychological treatment. Over sixty percent of the parent-child pairs had no agreement on which behaviors were actually problematic and in need of treatment, with children often listing more problematic behaviors overall than their parents. Similarly, work by Stanger and Lewis (1993) found significant discrepancies between children, parents, and also teachers regarding the presence of problematic behaviors, showing that children tended to report more behavioral problems than both parents and teachers, with teachers reporting the fewest behavioral problems overall. Additional work by Mills and
Rubin (1990; Rubin & Mills, 1992) suggests that not only are adults overlooking problem behaviors, but that they view certain kinds of problematic behaviors differently than others, such that behaviors that are thought to be just a “phase” in development are seen as less problematic.

These studies, among others, suggest not only that adults show poor overall understanding of children’s behaviors, but also more specifically that potentially problematic behaviors often tend to be perceived as normal. A meta-analysis conducted by Achenbach and colleagues (Achenbach, McConaugh, & Howell, 1987) investigating the agreement between parents, teachers, and other mental health workers assessing emotional and behavioral child problems found only modest agreement between informant types, ultimately resulting in unidentified problems. The misidentification of truly problematic signs can ultimately be detrimental to the child’s development (see Garland et al., 2001). Even in cases where the problematic behaviors do not lead directly to a psychological disorder, developmental problems can still result in other undesirable outcomes, such as being an adult with an unlikeable or difficult personality. Thus, as it is important to obtain a clearer understanding about why adults overlook these potentially problematic behaviors in children; the focus of the current work is on identifying key factors that contribute to this normalization process.

The following sections will detail specifically what is meant by “problem categories” and how the current work attempts to gain understanding into how these categories operate, highlighting the possible influence of explanations in the problem categorization process. Previous work looking at problematic adult behaviors will be discussed insomuch as it informs how problem category judgments might be made for problem cases that are less clear, which is the focus of the current work. Additionally, we will discuss how domain experience may also influence how problem category judgments are made for children’s potentially problematic
behaviors. Lastly, the clinically relevant factors that comprise the problem category judgments in the current work will be introduced, followed by a brief overview of the current experiments.

What are “Problem Categories”? 

We suggest that identifying potentially problematic behaviors in children can be conceptualized as one instance of the everyday task of problem categorization. Indeed, in daily life, people are continually faced with situations in which they must determine if a problem is present (e.g., medical diseases, mental illness, and car and computer problems). In previous work, we coined the term “problem categories” to refer to such classifications of undesirable states of biologically based kinds, psychologically based kinds, and artifacts (i.e., human-made kinds; Yopchick & Kim, 2009). These domains of interest – biology, psychology, and artifacts – are of particular importance. It is well established that people hold naïve framework theories about how each of these domains operates, what causal laws are possible, and how categories exist and function in each of these domains (Carey, 1995; Keil, 2006; Wellman & Gelman, 1992). These naïve framework theories can be thought of as grand theories that apply to an entire domain, whereas naïve theories in general can refer to both framework theories as well as smaller, more localized theories that often fall under the grand framework theory. Specifically, research has shown that people have naïve framework theories about physics, biology, and psychology and that these framework theories provide constraints and predictions about how categories in each domain function. For example, we know that biological kinds (e.g., animals) breathe and that artifacts (e.g., scissors, paintings) do not. Specifically, people tend to believe that the central or defining feature for biological kinds is their origin, whereas for artifacts the central feature is believed to be either the function (e.g., scissors have to cut), or the creator’s intent (e.g., a painting that evokes a particular emotion; Ahn, 1998; Bloom, 1996; Keil, 1989).
Framework theories help to organize specific kinds of categories and causal properties within those categories. For example, the theory of evolution constrains the biological taxonomy of animals, such that biological kinds are organized into a hierarchy (e.g., mammals are of a higher order than cats, which are of a higher order than the specific breed of Siberian cats).

Within a category structure, there are also causal properties. Consider artifacts, which are created with intention and function; it has been argued that the intention of the creator ultimately causes the surface features and overall appearance of an artifact (Keil, 1989; e.g., a canvas painting is created with certain paints and brushes to serve the intention of the artist). Folk psychology is concerned with the ontological and causal aspects of the mind; that is, reasoning about the nature and existence of mental states. Although people’s understanding of the mental states of others does change dramatically over the course of development (Birch & Bloom 2007; Stanovich & West, 2008), people in general, even including young children, regularly try to reason about other people’s mental states and have naïve ideas about how other people think and behave (e.g., Wellman & Estes, 1986). Understanding how mental states lead to action is a critical aspect of folk psychological theory. We have previously argued elsewhere (Yopchick & Kim, 2009) that problem categories may exist and function in a similar way across domains (e.g., cancer in the biological domain, computer viruses in the artifact domain), the current work considers problem categories in the context of folk psychology, and does not attempt to make strong claims about other problem categories in other domains. This project is specifically addressing the question of how people go about identifying potential psychological problems. For the purposes of the current work, we assume that psychological problem categories are comprised of people exhibiting unwanted mental states and behaviors, which can lead to impairments in other areas of functioning.
The concept of psychological problem categories in particular is consistent with Wakefield’s proposal that mental disorder can be defined as “harmful dysfunction” (Wakefield, 1992; 1997; 2007). This approach suggests that when determining whether a mental disorder diagnosis is warranted, one must first evaluate whether the current condition is undesirable and dysfunctional to the individual. Behaviors, Wakefield argued, should only be classified as disordered when they are both harmful to the individual’s functioning in society and result from a dysfunction in normal human processing (e.g., they are an abnormal response). Importantly, for the current work, if undesirable or unwanted behaviors are not seen as directly harmful or are not related directly to an internal dysfunction, they may still be viewed as problematic in a more general sense, but will likely not require a mental disorder diagnosis. When we are talking about psychological problem categories, we are referring to an undesirable state that should be corrected to what the individual considers a normal state; with respect to the behaviors, this could include both disordered behaviors or other undesirable behaviors such as recklessness, selfishness, etc. Therefore, examining psychologically problematic behaviors more generally, as opposed to severely disordered behaviors, allows for consideration of a much wider range of behaviors that people may regularly encounter on a daily basis.

When considering how people might reason about problem categories, we propose a set of specific stages that may be necessary in making problem category judgments. First, people must notice when an exemplar exhibits odd or potentially problematic behaviors that warrant a search for their cause or causes. Malle and Haslam (Malle, 2004; Haslam, Ban, & Kaufmann, 2007) have proposed that awareness of an odd or potentially problematic behavior (as a result of finding that behavior ultimately being difficult to understand) will often start a search for meaning of those behaviors.
Second, people will initiate and carry out a search for possible causes, trying to identify and evaluate those that help to make the most sense of the behaviors, or increase perceived understanding. To help increase perceived understanding, certain cues will be used – both temporal cues (knowing causes precede effects; Einhorn & Hogarth, 1986) and attributional cues (whether the behaviors seem to be caused by internal properties of the person, or external properties of the situation, and whether they are stable or unstable over time; Jones & Davis, 1965; Kelley, 1967; Weiner et al., 1972). Together, these possible causes will be assessed for how well they increase perceived understanding of the behaviors in question, and those explanations that help to make the most sense of the behaviors will then be isolated.

Third, with a plausible cause isolated, the need for intervention must be determined; if the behavior is well understood and appears normal then no intervention will be warranted, whereas if the behavior is poorly understood or still appears problematic (that is, if the isolated cause does not result in greater understanding), intervention may be perceived as necessary. If it is determined that intervention is needed, opinions are formed as to the best mode of intervention, when information about types of interventions is available. Previous work in our lab and others (Ahn, Proctor, & Flanagan, 2009; Yopchick & Kim, 2009) has found that when behaviors are determined to in fact be problematic, the goal is ultimately to eliminate the problem completely, and treatment is chosen accordingly.

The current work focuses mainly on the second proposed stage here, the search and evaluation of possible causes. When reasoning about potentially problematic behaviors, the causes that are isolated ultimately influence whether the behaviors are perceived as being poorly understood or whether they increase perceived understanding of the behaviors. Specifically, we suggest that when the behaviors are perceived as well-understood they will be seen as less
problematic than when those same behaviors are perceived as poorly understood.¹

To date, the factors that contribute to problem categorization judgments are largely unknown. Research on the effects of explanations on reasoning in both the clinical and cognitive domain, however, suggests that causal explanations may be one useful cue in helping to determine whether a problem is present or not. Specifically, explaining why a particular behavior occurs can make that behavior seem more probable (e.g., Kahneman & Tversky, 1982; Ross, Lepper, Strack, & Steinmetz, 1977) and perhaps by extension, more “normal” (Ahn, Novick, & Kim, 2003; Kim & LoSavio, 2009). For example, consider conduct disorder, a disorder of children and adolescents that is characterized by highly aggressive behavior towards others and a disregard for rules and social norms (APA, 2000). Previous work found that explanatory content (i.e., internal psychological dysfunction or a negative social environment) strongly influences whether conduct disorder related behaviors are diagnosed as a psychological disorder or are seen as a normal adaptation to environmental situations (Wakefield et al., 2002).

Additionally, previous categorization research investigating people’s perceptions of disordered adult behavior (e.g., Ahn, Novick, & Kim, 2003; Kim & LoSavio, 2009) has shown that having a contextual explanation for pathological symptoms can result in the symptoms’ seeming more psychologically healthy and less in need of treatment for both naïve and experienced reasoners². Furthermore, Yopchick and Kim (2009) found that lay people use causal explanations for individual symptoms to infer the nature of the category (e.g., whether psychologically or biologically rooted), and to infer how best to intervene upon category

¹ In the General Discussion, a more detailed proposal of how the entire problem categorization process unfolds is addressed, highlighting the process of making attributions (Kelley 1973; 1979; Malle 1999; Malle, Knobe, O’Laughlin, Pearce, & Nelson, 2000). In the current project, the focus is on the second proposed stage, specifically examining the role of explanations in judgments regarding problem status.
² Please see the General Discussion for a discussion on the rationality of this effect.
members (e.g., with psychotherapy versus drug therapy). With respect to the current project, we suggest that having a potential explanation for a set of behaviors may help inform the nature of the behavior as either problematic or not, which may then influence future judgments about category members.

**Current Aims**

The main focus of the current work is to identify what factors contribute to problem categorization judgments, and most importantly what factors lead to the normalization of problematic behaviors as found in previous research. The core aims of the current work therefore are threefold; they are briefly introduced here and then discussed more extensively in the remainder of this introduction. The first aim is to examine whether explanations influence adults’ problem category judgments for ambiguous cases (i.e., their judgments of the degree to which a case should be classified as a problem), asking if the presence of an explanation for such cases aids in resolving the uncertainty about whether a problem is present. Behaviors like Cassie’s are ambiguous in the sense that they are not clinically disordered according to official psychiatric nosologies such as the *DSM-IV-TR* (2000), but could still potentially be seen as warning signs for future issues. Parents are often faced with situations like Cassie’s, where the behaviors lead the parents to question whether or not they should be concerned about their child’s well-being. Therefore, systematically examining how explanations affect reasoning about children’s ambiguous behaviors holds both cognitive and clinical relevance.

The second aim in the current work is to jointly investigate the effects of explanation and experience on reasoning about children’s ambiguous behaviors, asking if experience also influences adults’ problem category judgments. The perceived normalization of behaviors that comes about as a result of contextual explanations occurs in clinical psychologists as well as
students, and in real life disorders as well as artificial disorder cases (e.g., Ahn, Novick, & Kim, 2003; Kim & LoSavio, 2009; Kim, Paulus, Gonzalez, and Khalife, 2011; Kim, Paulus, Nguyen, & Gonzalez, 2012). However, prior work in categorization indicates that different kinds of experience with category members can lead to major, distinct shifts in conceptual structure and thinking (e.g., Murphy & Wright, 1984; Proffit, Medin, & Coley, 2000). We ask whether the domain experience of parents, who regularly reason about children in the real world, influences their use of explanations when making problem categorization judgments about ambiguous child behaviors.

Finally, the third aim is to examine whether adults use their own generated explanations to resolve the ambiguity around these potentially problematic behaviors, and to determine what characteristics of generated explanations predict problem category judgments. Early work investigating the effects of explanations on reasoning about adults’ disordered behaviors (Ahn et al., 2003; Kim & LoSavio, 2009) not only provided a plausible explanation for the disordered behaviors (e.g., stress at work), but also the complete causal mechanism (e.g., stress at work causes insomnia, and the resultant sleep deprivation causes trouble remembering the names of objects, which in turns leads to extreme anxiety from fear of embarrassment). More recent work omitted the full causal mechanism, but still provided information about life events that could reasonably be conjectured to have precipitated the disordered behaviors (e.g., Kim et al., 2011; 2012). These previous studies present evidence that when plausible explanations are provided, they influence the perceived normality of severely disordered behaviors. Explanations have always been provided in these previous studies, and in many ways this may reflect real-world situations when someone (i.e., friend, neighbor, teacher) offers an explanation for a behavior. However, it may also often be the case, in the real world, that no explanation is provided or
readily available. In these cases, people may sometimes mentally search for and generate causal explanations to help make sense of these behaviors. Therefore, our third aim seeks to uncover, for the first time, how self-generated explanations might influence problem category judgments.

The remainder of this Introduction section briefly reviews empirical work on the influence of explanation when reasoning about problematic behaviors in both the clinical and cognitive literature, and how these findings may help inform our understanding of the factors influencing problem category judgments. Additionally, we will discuss how experience in the domain (i.e., experience with children) may influence judgments about children’s behaviors. Finally, we give the rationale for the current work, which focuses on the intersection of explanation and experience when reasoning about problem categories, as well as the influence of self-generated explanations.

In the section to follow, previous work investigating reasoning about adults’ severely disordered behaviors is discussed. Together this prior research suggests that explanations have a strong influence on problem categorization and may ultimately lead to the normalization of problematic behaviors.

**Explanations and the Perceived Normalization of Disordered Behaviors**

In an informal observation after hearing several anecdotes, Meehl (1973) suggested a possible way in which clinicians are influenced by explanatory context. Specifically, he speculated that when clinicians have an explanation for a patient’s disordered behaviors, they feel that they understand the behaviors, and the result is a feeling that the patient is in fact relatively normal and that their behavior is actually acceptable. In our view, another way of conceptualizing this phenomenon is that having an explanation may guide clinicians’ perceptions
of a patient’s problem category status. Meehl informally termed this phenomenon the “understanding it makes it normal” effect, and as an illustration, described a case in which a man was on trial for murdering his wife. After wanting to better understanding the dynamics of the husband and wife relationship (e.g., how the wife spoke to her husband in the mornings), the clinical psychologist who testified as an expert witness for this case asserted that if he only knew why the man had killed his wife then the murder would become more understandable and thereby more normal and acceptable. However, Meehl suggested that such reasoning could be construed as non-normative because even if the clinician knows why a person acted in the way they did, the behaviors themselves remain unchanged in the real world and therefore may still be abnormal, unhealthy, and in need of correction or intervention. The issue of rationality will be returned to in the General Discussion.

In the first empirical investigation of the type of situation described by Meehl, Wakefield and colleagues suggested that negative environmental context plays an important role in diagnosing conduct disorder. Clinical graduate students were asked to rate their level of agreement with a diagnosis of conduct disorder as well as their treatment recommendation for conduct related behaviors that were either explained by an internal dysfunction in the child or a negative environmental situation (Wakefield et al., 2002). Conduct disorder is particularly noteworthy with respect to the issue of explanatory context, as the DSM-IV-TR specifies that a diagnosis of conduct disorder does not apply if the behaviors can be understood as a survival or adaptive response to an extremely toxic environment, such as a child who has escaped a war-torn country and who is showing aggressive or stealing behaviors (APA, 2000). Consistently,

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3 The issue of identifying “undesirable states” or problem status as it relates to psychological abnormality has been debated for years (Kim et al., 2011). Researchers and clinicians alike continue to disagree on how exactly one determines what mental states are truly problematic and which are not.
participants judged the children whose behaviors could be explained by internal dysfunctions to have a psychological disorder, but those children whose exact same behaviors could be explained by the environment were not seen as having a psychological disorder. Although these particular findings are consistent with the *DSM-IV-TR* in that consideration of context is specified for conduct disorder, previous work has shown that clinicians are consistently influenced by context for other disorders even when the *DSM-IV-TR* does not specify to do so (Kim et al., 2012).

Hsieh and Kirk (2003) found analogous results to those of Wakefield et al. (2002) in an investigation with psychiatrists, such that psychiatrists perceived externally caused conduct related behaviors as more normal than those same behaviors caused by an internal dysfunction. Additionally, psychiatrists also anticipated that the internally caused behaviors would likely take a more negative course in the future than those same behaviors caused by external events. Together with the findings of Wakefield et al. (2002), these results provide evidence that explanatory, negative environmental context can influence people’s perceptions of children’s problematic behaviors.

Relatedly, decades of attribution research have found a positivity or self-serving bias, such that positive behaviors are more often attributed to internal characteristics of the self and others and negative behaviors are more often attributed to the environment, and therefore not the individual’s fault (Mezulis, Abramson, Hyde, & Hankin, 2004; Taylor & Koivumaki, 1976). A meta-analysis by Mezulis and colleagues (Mezulis et al., 2004) compared 503 independent effect sizes on this self-serving bias, resulting in an extremely large overall effect (Cohen’s $d = .96$). Ultimately, all populations investigated were shown to have a strong tendency to describe their own positive behaviors as being caused by internal properties, but more importantly for the purposes of the current work, negative or potentially problematic behaviors were seen as the
result of situational factors and therefore not caused by the individuals themselves. Across three studies, Taylor and Koivumaki (1976) found an overwhelming bias to attribute the negative behaviors of others to the environment and out of the individual’s control. In line with the previous work discussed on conduct disorder, these findings suggest that one reason why potentially problematic behaviors are overlooked is that negative events are explained away by situational factors.

In the first investigation of the influence of explanatory context on lay judgments of adults’ disordered behaviors, Ahn et al. (2003) presented disordered behaviors (e.g., suffering from insomnia, having trouble remembering names of objects, suffering from episodes of extreme anxiety, etc.) with and without contextual explanations (e.g., being very stressed out due to workload) to both naïve adults (i.e., undergraduates) and domain-experienced adults (i.e., clinical psychologists). When the behaviors were paired with plausible life event explanations, both naïve and experienced adults perceived the behaviors as more normal than those who saw the same behaviors without a plausible explanation. These results provided empirical support for Meehl’s claim that having explanatory context can lead people to perceive abnormal behaviors as more normal.

Further research additionally suggests that having a plausible explanation for disordered behaviors leads not only to the behaviors seeming more normal, but also more culturally acceptable and less in need of treatment. Kim et al. (2012) presented clinical psychologists with case vignettes of clients experiencing depression with and without plausible life event explanations (e.g., following the death of a loved one, learning that one’s spouse had an extramarital affair, etc.). When the depressive symptoms were paired with any plausible life event, clinical psychologists perceived the behaviors as more normal and acceptable than those
behaviors without a plausible life event. Lastly, with undergraduates, Kim and LoSavio (2009) also showed that plausible life events result in behaviors seeming less in need of psychological intervention than those without plausible life events.

Taken together, the consistent finding that explanations can result in problematic behaviors seeming less disordered, more normal, and less in need of treatment indicates that the effects of explanation when reasoning about problem categories comprise a rather robust phenomenon. However, all previous work has examined judgments about adults' severely disordered behaviors (i.e., full-blown DSM-IV-TR symptoms and disorders) that have not only been clearly established as belonging to a problem category, but also a psychological disorder category. In the current project, we are investigating judgments about behaviors that, upon initial presentation, are neither clearly psychologically disordered nor clearly psychologically normal; instead, the behaviors are ambiguous as to whether or not they suggest a potential psychological problem. As detailed in the next section, the ambiguous nature of these behaviors enables a unique examination of the role of explanation, and specifically different types of explanations, in problem categorization, which is the focus of the current work.

**Problem Category Judgments for Ambiguous Cases**

The current project is the first attempt to address the issue of whether, and how, the availability of an explanation helps people decide whether or not ambiguous behaviors indicate a problem, as again past research in this area has only presented behaviors that are severely disordered and already clearly indicating a problem. In prior research, the critical question with regard to the influence of explanations was whether disordered behaviors would seem *less* severely disordered when paired with different types of causal explanations (e.g., plausible, implausible). In the current project, we are asking people to consider instead the degree to which
these behaviors should be viewed as a problem at all. We suggest that when it is unclear whether a behavior is problematic or not, the search and evaluation of available explanations begins, and if an explanation can be isolated that increases perceptions of understanding, this may result in the behaviors seeming less problematic overall. Specifically, we ask: will the presence of an explanation that increases perceived understanding help resolve the uncertainty around whether an ambiguous behavior is a problem or not? Taken together with past research, we anticipate that when an explanation results in an increased sense of perceived understanding for children’s ambiguous behaviors, the increased feeling of understanding will ultimately result in the behaviors seeming less problematic. When little else is known about the child, relying on the contextual explanation to help disambiguate the nature of the behavior may be the most feasible option.

Importantly, past research has shown that different types of explanations do not influence judgments about disordered behaviors in the same way. Previous work on the normalizing effects of explanations has identified a range of conditions under which such effects come about. Most critically, it appears that only explanations that enhance perceived understanding of the behaviors (e.g., those that are proportional to the behaviors in strength and valence, those that are plausible, and those that are life events external to the person’s control, as detailed below) lead to increases in perceptions of normality.

For example, Kim et al. (2011) presented clinical psychologists with an event that was either traumatic or mildly distressing, followed by behaviors that were perceived to be severely disordered, mildly distressing, or unaffected by the prior event. Clinicians perceived individuals as being more psychologically abnormal when the event provided was perceived as being mismatched to the behaviors (e.g., an everyday event leading to disordered behaviors) than when
the event and behaviors were matched in valence and strength (e.g., a traumatic event leading to disordered behaviors). Following these results, Kim et al. (2011) proposed a proportionate-response hypothesis, such that an explanatory event results in a person’s behaviors seeming more normal only to the degree that the behaviors and event are proportionate in both strength (e.g., how mild or extreme are the behavior and explanation) and valence (e.g., how positive or negative are the behavior and explanation) to each other, and as a result increase overall feelings of perceived understanding. In a separate study, they also showed that clinicians’ understanding of the behaviors was directly affected by the degree of mismatch between the behaviors and previous events, such that the more disproportionate the behaviors and events were, the harder the behaviors were to understand, resulting in decreased perceptions of normality.

Additionally, past work has shown that plausible explanations (Ahn et al., 2003) can increase perceptions of normality for severely disordered adult behaviors. Specifically, when a plausible causal mechanism was presented for disordered behaviors (e.g., stress at work causes insomnia, and as result of sleep deprivation causes trouble remembering objects, which in turns leads to extreme anxiety from fear of embarrassment) the behaviors were seen as overall more normal than were behaviors described with an implausible causal mechanisms (e.g., solitary activities causing excessive attention to make up for the lack of human contact, which in turn causes an inability to remember new information as the information is expected to be remembered by others).

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4 Following Kim et al. (2011), we are using the term “perceived understanding” to refer to the perception of comprehension of behaviors. Phenomenologically, this may manifest as a gut feeling that the behavior now “makes more sense.” This feeling can likely occur whether or not the person really does understand the causal mechanism; that is, perceived understanding can be distinct from true understanding.
Furthermore, when disordered behaviors were presented with either external life events (e.g., stress as work) or brain abnormalities (e.g., problems in the reticular formation of the brain stem), only the external life events led to the behaviors being perceived as more normal. Critically, in a follow-up study, Ahn et al. (2003) found that undergraduates felt they had a poor understanding of the causal mechanisms involved in the brain abnormality explanations as compared to the external life event explanations. This finding is consistent with the notion that greater perceived understanding leads to increased perceptions of normality given external life event explanations. Kim and LoSavio (2009) further found that only life events external to the client’s control, rather than internally-precipitated life events, led to a decrease in judgments of hypothetical clients’ need for treatment. Taken together, all of these previous findings suggest that the critical factor regarding perceptions of normality appears to be how well the behaviors are understood, such that the better the overall understanding, the more normal and less in need of treatment the behaviors are perceived to be. However, previous work has only indirectly tested the understanding hypothesis. Testing this hypothesis is one of the goals of the current project (i.e., Experiment 3).

Regarding problem categorization for ambiguous cases, it may be that only certain kinds of explanations will increase understanding of these potentially problematic behaviors, and therefore only certain explanations will be useful in helping to alleviate the uncertainty around problem status. Returning to our running example, suppose that one were to learn that Cassie’s parents recently brought her baby sister home from the hospital. Cassie’s behavior (wanting to use a baby bottle again) should seem relatively consistent with this explanation, and might not seem problematic after all, if reasoners perceive the explanation as being reasonably proportionate to the behaviors (i.e., both explanation and behavior are moderately severe and/or
negative), plausible as an explanation for the behaviors, and is a life event outside of the child’s control. Therefore, one might expect this kind of explanation to help increase feelings of perceived understanding (e.g., we might feel it is reasonable to suppose that when Cassie sees her new baby sister using a bottle, she wants to use one again as well). If one were to learn instead that Cassie’s parents recently brought her grandmother home from the hospital, Cassie’s behavior (wanting to use a baby bottle again) might seem inconsistent with this explanation and the behavior could be perceived as quite strange in light of this information. Note that this kind of inconsistent or implausible explanation is still proportionate to the behaviors, and outside of the child’s control, but the mechanism by which it could have caused the behaviors is unclear, so critically, one might expect that it will not increase feelings of understanding, and consequently be taken to suggest an underlying problem in Cassie’s behavior.

As mentioned, in past work when explanations were implausible as causes for the behaviors in question, there was no effect on judgments about the normality of the behaviors. However, this may have been because the behaviors were already seen as incredibly abnormal and disordered (i.e., they were already at ceiling for abnormality; see Ahn et al., 2003). Examining judgments about ambiguous behaviors in the current research will allow for a fair test of the possibility that an implausible explanation could make a behavior seem even more abnormal and problematic than without any explanation. When the behaviors themselves are ambiguous, the question is whether a plausible or consistent explanation results in the perception that these behaviors are less problematic, and whether an implausible explanation results in the perception that the same behaviors are more problematic than if no explanation of any kind is present.
The difference between these two types of explanations is that explanations that are consistent with the behaviors should elicit greater feelings of perceived understanding of the behaviors, such that lay people’s naïve background knowledge should readily provide a causal mechanism linking the explanation to the behaviors. For inconsistent or implausible explanations, however, there would be no such increase in perceived understanding, as no commonly held background knowledge would be available to provide a causal mechanism. When an inconsistent explanation is given, people may feel that they now understand the behaviors even less because they manifested quite mysteriously after an event with no clear causal connection between them. This perception of decreased understanding (relative to not having had any explanation) may lead to judgments of decreased normality. Previous work (Yopchick & Kim, 2012), has found that when an explanation is irrelevant to the behaviors in question, causal connections from the cause to the behaviors are less likely to be drawn. The critical difference between these two types of explanations, therefore, is the degree to which they may help resolve the ambiguity around the problem status of the behavior by affecting how well people feel they understand the behaviors.

Moreover, as previous research on adult disordered behaviors has shown that only explanations with certain characteristics appear to lead to increased perceptions of normality (e.g., plausibility, external life events), the current work examines, for the first time, whether and how these constraints apply under more realistic conditions. First off, as mentioned, by examining problematic behaviors more generally, rather than behaviors that are psychologically disordered, the current work is able to address a wider range of behaviors that adults may encounter and reason about on a regular basis. Additionally, by asking adults to provide their own explanations, we will be able to examine what kinds of characteristics are present in their
generated explanations. Is it the case that the characteristics of explanations that were identified in previous work are critical for eliciting normalized perceptions of behaviors (i.e., explanations must contain these specific elements to normalize behaviors), or are they simply some characteristics among many that happen to increase people’s sense of understanding? If the latter is true, then perhaps any explanation that a person feels increases their own understanding of the behaviors, regardless of whether they have these specific characteristics (e.g., plausible, external life events proportionate to the behaviors), normalize perceptions of behaviors.

Together, previous research suggests that explanations with particular characteristics (i.e., plausible, external life events, that are proportionate to the behaviors) will lead to increased perceptions of normality for adults’ disordered behaviors. The current work aims to investigate whether these same kinds of explanations will similarly influence perceptions of potentially problematic child behaviors, and whether self-generated explanations also contain these same properties.

**Explanation and Domain Experience**

An additional question of interest is whether experience in the domain can influence reliance on explanations when reasoning about potentially problematic child behaviors. As discussed, applied developmental research has shown that both experienced and naïve adults tend to show systematic inaccuracies in identifying children’s problematic behaviors. However, it is unclear whether these inaccuracies could be a direct result of explanatory influences. Previous work showing normalizing effects of explanations for disordered behaviors has shown that clinicians and lay adults are both susceptible to these effects, showing no clear influence of their experience (Ahn et al., 2003; Kim et al. 2011; Kim et al., 2012). However, it is important to note that clinicians have formal training in mental disorder categorization and theories of
psychopathology through years of intensive schooling, as well as concrete practice using the 
*DSM-IV-TR* (APA, 2000) for categorizing disorders. In addition, clinicians have had personal 
experience in reasoning about and working with numerous clients. Parents of young children, on 
the other hand, frequently have very little formal training, if any, with regard to raising children 
when they become responsible for their first young child. Specifically, parents of young children 
have considerable day-to-day experience with one (or very few) children across numerous 
settings. This kind of experience differs considerably from clinicians’ experience with clinical 
patients, where the patients are seen for roughly an hour a week, in one particular setting (i.e., the 
clinician’s office), and therefore clinicians have little direct knowledge of how their patients 
function in everyday situations. By focusing on parents rather than clinicians, we can examine 
the role of having one or more years of rather intensive, informal, day-to-day experience with 
relatively few exemplars in the domain, and whether the influence of explanations in problem 
category judgments differs depending on whether adults have had this kind of experience. This 
type of experience, coupled with the use of ambiguous behaviors (rather than clearly disordered 
behaviors as studied in past work), provides a novel examination of the possible interactive 
effects of explanation and experience that previous work using highly trained clinicians has been 
unable to address. Ultimately, parents’ experience with child behaviors may help inform the 
problematic nature of the behaviors utilized in the current work, as these behaviors are not 
severely disordered, and may actually be problematic in non-disordered ways (e.g., selfishness); 
rather, they are ambiguous and may be similar to the kinds of behaviors that parents regularly 
encounter.

Previous research on how domain experience affects categorization more generally 
suggests that concrete experience with category members can lead to major shifts in conceptual
structure and thinking. For example, Murphy and Wright (1984) found distinct differences in the category structure of three child pathological conditions (i.e., aggressive-impulsive, depressed-withdrawn, and borderline-disorganized) between naïve (i.e., undergraduates) and experienced adults (e.g., clinical counselors). People who had the greatest experience with children provided far more attributes of each pathological category than undergraduates with little to no experience in child pathology. Additionally, the features listed for the three child pathologies for the inexperienced undergraduates were quite distinct and showed little overlap between categories. Experienced adults, on the other hand, showed quite different category structures than the undergraduates, with significant feature overlap between categories, suggesting that experience with the categories led to systematic changes in category representation.

Work in the domain of folk biology supports similar shifts in category structure with domain experience. Shafto and Coley (2003), for example, examined knowledge of marine life in naïve undergraduates and expert commercial fishermen. When asked to sort the marine creatures into categories that “go together,” undergraduates tended to group based on appearance whereas the commercial fishermen enlisted several other important relations among the marine life, such as commercial, ecological, and behavioral factors, suggesting a deeper knowledge of the relations between category members. Proffitt, Coley, and Medin (2000) found similar results when examining tree experts with difference kinds of experience (i.e., landscapers, taxonomists, and parks maintenance personnel), where the particular kind of experience the experts had lead to different reasoning strategies based on their domain knowledge. In particular, experts’ reasoning was not consistently predicted by the “diversity effect” found in naïve reasoners’ inductive inferences (i.e., making stronger inferences from premise pairs that have greater global coverage of a category compared to pairs with narrower coverage). Specifically, the parks
maintenance personnel rarely utilized a diverse reasoning strategy, whereas the taxonomists were most likely to use this strategy. Additionally, experts, unlike naïve reasoners, consistently cited causal mechanisms in their categorization justifications.

Overall, these results suggest that having experience in the domain can shift category knowledge in distinct ways, resulting in different category structures for those who have direct experience with category members than for more naïve reasoners. In the current project, parents have had experience with relevant category members (in this case, children). One possibility is that this experience may enable circumventing use of explanations as a cue in problem categorization when reasoning about ambiguous cases in particular, as parents might instead rely on their own knowledge to make such judgments. Again, this kind of parental experience seems to differ substantially from clinicians’, where clinicians’ only have a limited environmental context to rely on when reasoning about disordered adults (i.e., the one-hour clinical session), whereas parents have experience with children in many different situations (e.g., home, the neighbors, the grocery store). As a result, one possibility is that parents may be less likely than clinicians to rely on explanatory information to determine if a behavior is problematic; instead, parents may use their acquired day-to-day, multi-situational experiential knowledge base from which to infer their judgments.

If parents were, for example, to be presented with the child Cassie (who wants to go back to using a bottle) and asked to make problem category judgments about these behaviors, it may not matter to parents that Cassie’s baby sister was recently brought home from the hospital. Instead, as a result of their parental experience, parents might be able to judge whether the behavior in question is problematic or not based on previous encounters with similar ambiguous behaviors (e.g., how similarly ambiguous children’s behaviors have been received by other
adults and children in their own experience). If this is the case, then we might not expect to see parents influenced by explanations when making inferences about children’s ambiguous behaviors. In sum, given that parents have direct knowledge of children, we are interested in whether this experience in the domain of interest (i.e., children’s behaviors) affects the degree to which explanation will be used as a cue to problem categorization.

Additionally, experience in the domain may affect the type of explanations that are self-generated. Previous attribution research focusing on explanations for children’s behaviors has shown that parents tend to give more internal or dispositional explanations for child problem behaviors than children give to those same behaviors, but that on the whole, parents tend to give more external or situational explanations for negative behaviors than they do for positive behaviors (Compas, Adelman, Freundl, Nelson, and Taylor, 1982; Furnham & Weir, 1996; Kelley, 1967; Miller 1995). Taylor and Koivumaki’s work on positivity bias (1976) also suggests that the better acquainted someone is with an individual, the more likely they are to attribute any negative behaviors to factors outside of the individual’s control. In this way, one might expect that parents would be inclined to consistently see negative behaviors exhibited by their own child as a result of something in the environment, rather than an underlying psychological problem in the child. Bacon and Ashmore (1985) suggest that the most basic categorization strategy parents use when reasoning about children’s behaviors is simply “behaviors I should do something about” versus “behaviors I don’t need to do anything about,” thereby demonstrating a recognition that not all behaviors need to be intervened upon. Work by Mills and Rubin (1990; Rubin & Mills, 1992) supports this suggestion, as children exhibiting only certain behaviors (e.g., withdrawal behaviors) were seen by parents as having behaviors that warranted treatment, where other problematic behaviors (e.g., aggressive behaviors) were not viewed as being in need
of treatment. Importantly, the literature on how lay adults (i.e., adults without children) explain children’s behaviors is rather sparse, with the focus often being on how parents reason about their own children (e.g., Compas et al., 1985; Mills & Rubin, 1990; Rubin & Mills, 1992; Yeh & Weisz, 2001).

The current work is able to examine differences between parents and lay adults generation of explanations when reasoning about children’s problem behaviors, based on domain experience. It may be that parents are better at generating explanations as a result of their experience with children on a regular basis, with knowledge of various kinds of behaviors and different situations in which various behaviors arise. However, it may also be that parents and lay adults do not differ with regards to generating explanations, as the need and ability to spontaneously connect events and behaviors causally seem to be quite universal (Anderson and Sechler 1986; Einhorn & Hogarth, 1986; Hastie et al., 1990; Keil, 2006; Kunda et al., 1990).

As experience in a domain has been shown to influence the way in which people reason about and structure categories, the current work addresses whether parental domain experience will similarly influence reasoning about problem categories. Experience in the domain of child behaviors may allow for increased understanding of children overall, and therefore less reliance on provided explanatory context for helping to make sense of potentially problematic behaviors. This additional experience could also lead to greater ease of generating one’s own explanation for why a particular problem behavior is occurring. Importantly, adults who do not have this experience with children would not be expected to have the same knowledge base about children and therefore might rely more heavily on provided explanatory information. In order to examine the possible influence of both explanations and experience on psychological problem categories, a comprehensive set of judgments relating to reasoning about the problem status of behaviors is
necessary. In the section to follow, the measures used in the current work to assess people’s judgments of problem status are discussed.

Assessing Problem Status

Previous work addressing psychological problem categories has largely focused on the influence of explanations on judgments of the abnormality of behaviors, a broad judgment that attempts to cover a very complex, multifaceted concept. We are therefore widening the scope of that research in one additional way by examining a range of different judgments relating to the overall psychological abnormality of an individual. The current work focuses on three specific kinds of judgments that are used both by the public as indicators of psychological abnormality and by clinicians in the sense that they correspond to the DSM-IV definition of mental disorder (Giummarra & Haslam, 2005; Haslam & Giosan, 2002).

The first factor of interest is perceived abnormality as it applies to the degree to which behaviors are not psychologically healthy (we will hereafter refer to this factor as the psychological health aspect of perceived abnormality). This factor corresponds directly to judgments of current psychological health, overall contentment, judgments of the likelihood of future behavioral problems given current behaviors, and the degree to which intervention is necessary. Specifically, the less psychologically healthy the behaviors are perceived to be, the more likely they will be perceived as psychologically problematic. The second factor of interest is perceived abnormality as it applies to the behaviors’ low statistical commonness, where the less statistically common the behaviors are perceived to be, the more likely they will be perceived as psychologically problematic. This factor is directly related to what Haslam and Giosan (2002) referred to as the “peculiarity factor,” such that behaviors are thought to be abnormal to the degree that they are rare, difficult to comprehend, and differ in kind from normal
behaviors. The final factor of interest refers to perceived abnormality as it applies to the behaviors’ eliciting negative *societal and cultural responses* (hereafter: *socio-cultural effects* of perceived abnormality). This factor includes judgments of the cultural acceptability of behaviors and the degree of social difficulties expected to occur as a result of the behaviors. Haslam and Giosan (2002) discussed the related factor “social deviancy”, where behaviors are seen as disordered when they come into conflict with societal norms. Ultimately, the more negative socio-cultural effects the behaviors elicit, the more likely they are to be perceived as psychologically problematic. In sum, the current studies not only assess the somewhat abstract concept of perceived psychological abnormality, but also focuses on three more concrete, clinically relevant factors that, together, may comprise a multi-faceted definition of perceived psychological abnormality and problem status.

**Overview of Experiments**

Again, the main focus of the current work is to gain a clearer understanding of how explanations and experience influence reasoning about psychological problem categories. To address this question, using a variety of explanation types, the current studies present ambiguous child behaviors that are not clearly problematic to both experienced adults (i.e., parents) and naïve adults (i.e., adults without children). If consistent explanations result in an increased perceptions of understanding, this should help resolve the ambiguity around the behaviors and ultimately result in the behaviors seeming less problematic than when the behaviors are perceived to be poorly understood. If domain experience leads to circumventing use of explanations when reasoning about these same kinds of ambiguous behaviors, then domain experience alone may help to resolve the ambiguity around the problematic nature of the behaviors. And lastly, if self-generated explanations lead to an overall increase in perceived
understanding of the behaviors, regardless of the explanation content, these self-generated explanations should help resolve the ambiguity around the problem status as well.

To examine (1) if explanations influence problem categorization judgments for ambiguous cases, (2) whether general domain experience influences the use of explanations in problem categorization judgments, and (3) whether and how self-generated explanations influence judgments about problem categories, a systematic investigation is necessary. Across all experiments, vignettes depicting children’s ambiguously problematic behaviors were presented. For each vignette, people made judgments regarding the problematic nature of the behavior that can be subsumed under the clinically relevant factors of psychological health, statistical commonness, and socio-cultural effects.

Experiment 1 addressed the first aim by asking whether adults use explanations to help resolve the uncertainty around whether a problem is present when reasoning about children’s ambiguous behaviors. Experiments 1 also addressed the second aim by assessing how knowledge from prior experience in the domain influences reliance on explanations as a cue to problem categorization in experienced adults (i.e., parents). In Experiments 1 the vignettes were presented with either an explanation that helped make sense of the behavior (hereafter: congruent explanation), an explanation that did not help make sense of the behavior (hereafter: incongruent explanation), or no explanation at all.5

Experiment 2 additionally addressed the first two aims, expanding upon the first study by including a wider set of clinically relevant judgments and also by recruiting a better-matched sample of naïve and experienced adults, controlling for age and education level. In Experiment 2 the vignettes were again presented with either a congruent, incongruent, or no explanation.

5 The construction of the congruent and incongruent explanations is described in detail in Experiment 1.
Lastly, Experiment 3 addressed the third aim, investigating the influence of self-generated explanations on problem category judgments, asking if any explanation -- regardless of content, as assessed by outside observers -- increases overall understanding. Experiment 3 also addressed the second aim, again examining a matched set of naïve and experienced adults. Finally, Experiment 3 assessed judgments about intervention, including a measure of whether or not the behaviors need to be changed. In Experiment 3, explanations were self-generated and later coded by a separate group for explanation type (i.e., internal, external), plausibility, positivity, and lack of extremeness.

**Experiment 1**

Experiment 1 tested whether having congruent or incongruent explanations for specific ambiguous behaviors in children, compared to the absence of any explanation, would systematically affect people’s judgments of the behaviors’ overall psychological health (i.e., normality and contentment), statistical commonness, and socio-cultural effects (i.e., cultural acceptability). Congruent explanations were designed to assess whether these kinds of explanations would result in the behaviors seeming less problematic than if no explanation was presented whereas incongruent explanations were designed to assess whether these kinds of explanations would result in the behaviors seeming more problematic than if no explanation was presented. All explanations were plausible, proportionate to the behavior, and outside the child’s control, and were not specific pathological symptoms. Again, the difference between these two types of explanations was that the congruent explanations were constructed to elicit greater feelings of understanding of the behaviors such that lay people’s background knowledge would readily provide a causal mechanism linking the explanation to the behaviors, whereas the
incongruent explanations would result in no such increase, as no commonly held background knowledge would be likely to provide a causal mechanism.

Although past work has shown no effect of implausible explanations on judgments of normality (e.g., Ahn et al., 2003), this may have been a result of the behaviors being incredibly disordered, or at ceiling level for abnormality. Implementing ambiguous behaviors in the current research will allow, for the first time, a fair test of the possibility that an implausible or incongruent explanation could make a behavior seem even more abnormal and problematic than without any explanation. Importantly, it is the behaviors themselves that are ambiguous; the question is whether a congruent explanation would make these behaviors seem less problematic and whether an incongruent explanation would make them seem more problematic. Again, the key difference between these explanations therefore, is the degree to which they may help resolve the ambiguity around the problem status of the behavior by affecting how well people feel they understand the behavior.

The current study examined the judgments of a relatively domain-naïve adult population (i.e., undergraduates) and a domain-experienced population (i.e., parents). If both groups of adults judge behaviors presented with congruent explanations to be more normal, to result in more overall contentment, to be more common, and to be more acceptable than those with no explanations, this would suggest that congruent explanations are an important factor influencing adults’ assessment of problem categorization for ambiguous instances, ultimately resulting in the behaviors appearing less problematic. If incongruently explained behaviors result in the behaviors seeming more problematic than when the behaviors are not explained at all, this would be the first evidence indicating that the influence of explanations for ambiguous cases can be fully bidirectional. Although many factors may contribute to perceptions of children’s
ambiguous behaviors, the major goal of this study was to determine if explanatory knowledge for
these kinds of behaviors is one element that affects problem category judgments.

Additionally, as parents are most often the ones making decisions about children’s
behaviors, they represent a particularly important and unique population: Not only do parents
have more one-on-one experience with children than other adults, but they also often decide
whether or not the child has a behavioral problem that warrants attention by a professional. On
one hand, the background knowledge that parents bring to the task about their own children may
diminish the influence of causal explanations, in that they may be more likely than lay adults to
have observed their own children performing behaviors of ambiguous normality, akin to those
described in the vignettes. On the other hand, given that previous work has consistently found
that parents overlook children’s problematic behaviors, we might expect parents to be just as
likely as other adults to explain away bizarre child behaviors, regardless of their domain
experience (Giummarra & Haslam, 2005; Yeh & Weisz, 2001).

Experiment 1 provides the first investigation of how explanations influence problem
categorization judgments for ambiguous child behaviors. If adults are using explanations to help
make sense of these kinds of ambiguous cases, than both parents and lay adults should perceive
the behaviors as less problematic when they are well explained, and perhaps more problematic
when they are ill explained. If parents’ domain experience provides additional information from
which to draw conclusions about these potentially problematic behaviors, parents may be less
likely than lay adults to rely on explanations as a cue to problem status.

Method

Participants. In Experiment 1, we recruited college-age adults, who as a group have
presumably had less contact overall with young children than parents, and would thereby
represent a relatively naïve population as a whole with regard to having prior direct knowledge about children’s behaviors. Ninety Northeastern University undergraduates took part in partial fulfillment of requirements for an Introductory Psychology course. We verified that none of the undergraduate participants had children of their own.

To additionally examine these same questions in a population with more direct experience reasoning about children, 108 parents of young children were recruited through Craigslist and a parenting newsletter distributed to parents in the same community in California. Advertisements for participants in this study were posted in both venues (i.e., Northeastern University as well as the parenting newsletter. Parents had at least one child, and no children above the age of 10 (to closely match the ages of the children described in the vignettes). Parents were placed into a raffle for one of several $50 Amazon.com gift cards for participating.

**Materials.** Nine vignettes depicting children from ages three to six were created, drawing upon internet discussion posts written anonymously by parents of young children on parenting websites, in which they asked the world at large to offer opinions on the question of whether or not their own child’s behaviors were normal (all potentially identifying details were altered significantly in the stimulus materials). The goal was to create realistic depictions of children who are neither obviously disordered nor obviously non-disordered, with the intent to examine whether and how explanations resolve this ambiguity one way or the other.

Next, congruent explanations and incongruent explanations were constructed for each vignette and were verified as such via pretesting (see below; see Appendix A for the full set). We constructed the congruent and incongruent explanations for each vignette to be as similar as possible to each other, changing only enough text to manipulate how well the explanation accounted for the specific behaviors. Again the goal was to create explanations that were
plausible, proportionate to the behaviors, and outside of the child’s control, and to design the content of the explanations so that naïve background knowledge would fill in the causal mechanism between the explanation and the behaviors for the congruent, but not the incongruent, explanations. To increase the realistic nature of the stimuli, the explanatory information was always described as having been provided by the parents of the child, who would presumably have the most knowledge of the particular child.

**Pilot study: Check of congruence manipulation.** To ensure that the congruent and incongruent explanations were in fact perceived as such by the participant population, an additional, separate group of 12 undergraduates were asked to rate how well each congruent and incongruent explanation explained the behavior described in each corresponding vignette. Ratings were made on a scale of 1-9, where 1 = “does not explain them at all,” 9 = “explains them completely,” and 5 = “explains them somewhat.” Each participant provided ratings for both explanation types for all ten vignettes, resulting in 20 ratings. The order of vignettes was randomized. As desired, the congruent explanations ($M = 6.85, SE = .32$) were perceived to explain the child behaviors much more completely than the incongruent explanations overall ($M = 3.22, SE = .33$; $t[11]=10.24, p < .001, \eta^2 = .91$). This was true for all individual vignettes as well (all $ps < .021$; all $\eta^2 \geq .40$). To complete the experimental design, only nine vignettes were needed for the main study, therefore one vignette was discarded based on having the most similar mean ratings for the congruent and incongruent explanations; however, all ten vignettes did have significantly different ratings for congruent and incongruent explanations.

**Procedure**

Each participant saw nine vignettes; three were presented with their corresponding congruent explanations, three with their corresponding incongruent explanations, and three with
no explanations at all (control condition). Three versions of the task were created so that each vignette was presented equally frequently with a congruent explanation, incongruent explanation, and no explanation between subjects.

Participants were asked four questions about each vignette regarding the normality, contentment, statistical commonness, and cultural acceptability of the behaviors, each on a 1 to 9 scale. For the normality measure, participants read, “In your opinion, how normal or abnormal are [Cassie]’s behaviors?” where 1 = very abnormal and 9 = very normal. For the contentment measure, participants read, “How much contentment versus distress do you think these behaviors cause [Cassie] in her daily life?” where 1 = causes a lot of contentment and 9 = causes a lot of distress. For the statistical commonness measure, participants read, “How rare or common are [Cassie]’s behaviors?” where 1 = very rare and 9 = very common. And lastly, for the cultural acceptability measure, participants read, “How culturally acceptable (in the U.S.) are [Cassie]’s behaviors?” where 1 = not at all acceptable and 9 = completely acceptable.

Each question type was presented in a block with the nine vignettes and corresponding explanations (i.e., congruent, incongruent, no explanation) using the online survey program Qualtrics. Within a block, all nine vignettes and corresponding explanations were presented sequentially for a given question, such that all questions for normality were answered for all nine vignettes in one block, all questions for cultural acceptability for all nine vignettes in one block, and so on. Within each of the four question blocks (i.e., normality, contentment, statistical commonness, cultural acceptability), the nine vignettes were presented in randomized order. With each new question block, each of the nine vignettes were re-presented, and participants were informed that they would be seeing the same vignettes multiple times for each of the different questions in the main instructions.
Results and Discussion

Once again, the main question among the three within-subject conditions was whether a congruent explanation (relative to no explanation) would result in the behaviors seeming overall less problematic than those that were unexplained, across the three clinically relevant factors regarding judgments of overall psychological health (i.e., normality and contentment), statistical commonness, and socio-cultural effects (i.e., cultural acceptability) of the behaviors. For both parents and undergraduates, ratings for behaviors with congruent explanations (relative to no explanation) and ratings for behaviors with incongruent explanations (relative to no explanation) were examined across all measures. To examine the differences between conditions, the three vignettes presented for each condition were averaged together (i.e., three vignettes presented with congruent explanations, three vignettes presented with incongruent explanations, and three vignettes presented without explanations). Each of the four question types were examined individually, collapsing across vignettes. All analyses were two-tailed and conducted at the $\alpha = .05$ level. For each individual measure, a 3 (Explanation Type: Congruent, Incongruent, No Explanation) x 2 (Experience: Undergraduates, Parents) mixed ANOVA was conducted.

Normality judgments. For normality judgments, the ANOVA revealed the critical main effect of Explanation Type ($F[2,196] = 56.31; MSE = 1.57; p < .001; \eta^2 = .22$). There was no other main effect or interaction (both p’s > .113).

Following these analyses, Bonferroni-corrected paired-sample $t$-tests were run. Across both parents and undergraduates, behaviors presented with a congruent explanation ($M = 6.13, SE = .11$) were judged to be more normal than behaviors presented with no explanation ($M = 4.85, SE = .10; t[197] = 10.24; p < .001; \eta^2 = .35$). Additionally, even behaviors presented with an incongruent explanation ($M = 5.18, SE = .11$) were judged to be more normal than behaviors
presented with no explanation ($t_{197} = 2.63; p = .009; \eta^2 = .03$). Congruently explained behaviors were judged to be more normal than incongruently explained behaviors ($t_{197} = 7.40; p < .001; \eta^2 = .22$; see Table 2). Although ratings for the incongruently explained behaviors were significantly different than those for the unexplained behaviors, the direction of means did not support the idea that implausible explanations decrease perceptions of normality. Instead, these results imply that even when behaviors are incongruently explained, they can seem more normal than unexplained behaviors. In the current study, only the life event explanation was provided, and the mechanism as to how the explanations led to the behaviors was not explicitly provided. As such, participants were free to conjure up their own mechanism for how even these incongruent explanations may have led to the observed behaviors. Participants may have assumed that even this irrelevant information must have a purpose if it was presented in the first place. Or perhaps the presence of any explanation, regardless of content, influences perceptions of problem status, even if the explanation does not truly explain the behaviors (cf., Langer, 1978). Importantly, however, incongruently explained behaviors were still judged to be less normal than congruently explained behaviors. Together, these results provide initial support for adults’ use of explanations when reasoning about children’s behaviors, such that explanations can result in the behaviors seeming overall less problematic.

**Contentment judgments.** For contentment ratings, the ANOVA again revealed the critical main effect of Explanation Type ($F_{2,196} = 5.01; MSE = 2.12; p = .007; \eta^2 = .03$). There was no other main effect or interaction (both $p’s > .338$).

Following these analyses, Bonferroni-corrected paired-sample $t$-tests were run. The behaviors of children presented with a congruent explanation ($M = 4.63, SE = .11$) were judged to cause the children more contentment than behaviors with no explanations ($M = 3.83, SE = .11$;
$t[197] = 2.73; p = .007; \eta^2 = .04$. Ratings for behaviors that were incongruently explained ($M = 3.46, SE = .14$) did not differ from ratings for behaviors that were unexplained ($M = 3.85, SE = .10; p = .911$; see Table 2).

**Statistical commonness judgments.** For statistical commonness judgments, the ANOVA revealed only a main effect of Explanation Type ($F[2,196] = 26.51; MSE = 1.57; p < .001; \eta^2 = .12$). No other effect or interaction was found (both $p$’s > .348).

Following these analyses, Bonferroni-corrected paired-sample $t$-tests were run. Behaviors presented with a congruent explanation ($M = 6.04, SE = .10$) were judged to be more common than behaviors presented with no explanations ($M = 5.27, SE = .10; t[197] = 6.13; p < .001; \eta^2 = .16$) for both parents and undergraduates. Ratings for behaviors presented with an incongruent explanation ($M = 5.25, SE = .10$) were not different from ratings for behaviors presented with no explanation ($p = .846$; see Figure 3). Additionally, congruently explained behaviors were judged to be significantly more common than incongruently explained behaviors ($t[197] = 6.52; p < .001; \eta^2 = .18$). These results, taken together, provide further evidence for adults’ use of explanations to help inform problem categorization judgments. No evidence that incongruent explanations influenced judgments of statistical commonness was found.

**Cultural acceptability judgments.** The ANOVA conducted on the cultural acceptability ratings also revealed the critical main effect of Explanation Type ($F[2,196] = 6.07; MSE = 2.19; p = .003; \eta^2 = .03$). Additionally, there was an interaction of Explanation Type and Experience ($F[2,196] = 7.33; MSE = 2.22; p = .001; \eta^2 = .04$). There was no main effect of Experience ($p > .578$).

To further examine the nature of the interaction, two additional ANOVAs, one for each experience level (i.e., undergraduates and parents), were conducted. For the undergraduates, the
one-way (Explanation Type: Congruent, Incongruent, No Explanation) repeated measures ANOVA revealed the critical main effect of Explanation Type ($F[1,88] = 15.70; \textit{MSE} = 1.71; p < .001; \eta^2 = .15$). Behaviors presented with a congruent explanation ($M = 5.37, \textit{SE} = .17$) were judged to be significantly more culturally acceptable than behaviors presented with no explanation ($M = 4.29, \textit{SE} = .16; t[89] = 4.94; p < .001; \eta^2 = .22$). Additionally, behaviors presented with incongruent explanations ($M = 4.73, \textit{SE} = .14$) were also judged to be more culturally acceptable than behaviors presented with no explanation ($M = 4.29, \textit{SE} = .16; t[89] = 2.82; p = .006; \eta^2 = .08$); however, again as with the normality measure, congruently explained behaviors were judged to be significantly more culturally acceptable than incongruently explained behaviors ($t[89] = 3.18; p = .002; \eta^2 = .10$). Again, these results suggest that even when behaviors are incongruently explained, they can seem more culturally acceptable than unexplained behaviors. For the experienced adults, however, the one-way (Explanation Type: Congruent, Incongruent, No Explanation) repeated measures ANOVA showed no effect of Explanation Type ($p = .952, \eta^2 < .001$; see Figure 1).

Thus, for undergraduates, it can again be seen that explanations informed problem category judgments, such that congruently explained behaviors were seen as more culturally acceptable than their incongruently and unexplained counterparts. For experienced adults, explanations did not inform problem categorization decisions. One possible reason why parents may not have been influenced by explanations for cultural acceptability ratings in particular is that parents could be drawing upon past experiences seeing how other people react to kids when they are behaving in ways that are somewhat undesirable. This past experience of seeing what behaviors are seen as acceptable or not may be particularly salient to parents, as they may be at least somewhat attentive to how other people seem to perceive their own child’s behaviors.
Naïve undergraduates, on the other hand, are unlikely to have had such experiences. Importantly, this is the first evidence that suggest experience in the domain may play a role in problem categorization.

Overall, for both parents and undergraduates, congruent explanations increased perceptions of psychological normality (i.e., normality and contentment) and statistical commonness of children’s behaviors. For these measures, a main effect of explanation type was found, showing that congruently explained behaviors are seen as generally less problematic than their unexplained counterparts. In addition, incongruent explanations never resulted in the behaviors seeming more problematic compared to unexplained behaviors, suggesting that explanations may have a unidirectional effect of only helping to eliminate the problem status of a category in ambiguous cases (see the Discussion of Experiment 2, however).

Importantly, the findings for the socio-cultural measure (i.e., cultural acceptability) alone show some support for an influence of experience in problem categorization judgments. Specifically, adults with domain experience (i.e., parents) were uninfluenced by explanation when making judgments about the cultural acceptability of the behaviors. Again, this may be a result of parents having more experience with what kinds of behaviors are acceptable in society, and therefore they do not need to rely on explanations in the same way that the naïve undergraduates did. Although this finding was again only for one of the measures, this possibility will be explored further in Experiment 2.

To our knowledge, this is the first investigation of the influence of congruent explanations on adults’ perceptions of children’s ambiguous behavior. Again, the goal when creating these vignettes was to present behaviors that did not clearly indicate a clinical disorder, unlike the stimuli in past work representing full-blown disorders such as depression and
psychosis. Using these ambiguous behaviors, we found that for the most part (three of the four dependent measures), congruently explained behaviors were perceived as less problematic than unexplained behaviors across levels of domain experience.

While Experiment 1 provides initial support for the influence of explanations in problem category judgments, there are also some limitations to this experiment. Most critically among these is the issue of domain experience. In the current experiment, Northeastern undergraduates represented our naïve experience level, with little to no experience with children. However, Northeastern undergraduates are also roughly the same age and are also a very homogeneous group (with regards to location, interests, etc.). Similarly, the parents in the current work were mainly recruited from a parenting newsletter in a localized community of California, again representing a rather homogeneous group. Ultimately, these two experience groups differed on many other factors in addition to experience (e.g., age, education level) that could be responsible for the finding that experience does play a role in cultural acceptability judgments. Therefore, as these differences may have been confounded with experience level itself, Experiment 2 sought to match the naïve and experienced populations in a more systematic way.

**Experiment 2**

The purpose of Experiment 2 was to systematically correct for the main limitation in Experiment 1 as well as to expand the general findings from Experiment 1. In Experiment 2, naïve adults were systematically matched in age and education level to the parents in this study (again Experiment 1 did not attempt to match the undergraduates with the parents on these factors). As age and education themselves may provide an additional kind of experience distinct from parental experience, the goal was to control for these factors as possible confounds in Experiment 2.
Additionally, Experiment 1 examined the role of parental domain experience in reasoning about problem categories, finding support for the influence of domain experience in only one of the four problem category judgments. However, parents, and even lay adults, may differ in the degree to which they have had prior direct experience with the behaviors depicted in the child behavioral vignettes. Therefore, Experiment 2 examined whether specific prior experience with a similar exemplar influences problem category judgments. To assess whether prior experience with the behaviors depicted in the vignettes influenced problem category judgments, parents and lay adults were additionally asked the degree to which any child they had ever cared for or interacted with had acted exactly like the children in each vignette.

Relatedly, parents in particular in Experiment 1 were required to have at least one child in their household under the age of ten, whereas the children in the vignettes were no older than six years old. As experience with the exact kinds of behaviors depicted in the vignettes may be an alternative source of experiential influence, Experiment 2 additionally sought to address this issue specifically. Parents in Experiment 2 were required to have a child between the age of one and six to more closely match the ages of the children described in the vignettes, in the hope of drawing more specifically upon parents’ experience with the age group in question. Constraining parental experience to these specific ages also allows for any potential exemplar influence to arise, as parents may have more exemplar experience with children who are similar in age to their own child (e.g., classmates, neighbors, etc.).

In Experiment 1, four measures of clinical abnormality were assessed; Experiment 2 sought to further specify the influence of explanation on the clinical definition of abnormality by expanding these measures. In Experiment 2, parents and lay adults were again presented with vignettes and their explanations, but this time the measures to assess whether a problem was
present or not were designed to address a wide range of the clinically relevant issues with the goal of examining the effects of explanation on several problem category judgments, rather than constraining these findings to only a few related judgments. Rather than directly assessing judgments of overall psychological abnormality, Experiment 2 assessed judgments of psychological health, asking for participants’ first impression of the child’s psychological health and beliefs about whether the behaviors would cause future problems for the child. Also, to more appropriately tap into judgments of the socio-cultural effects of abnormality, a measure of beliefs about whether the behavior would cause social difficulties for the child in addition to the measure of cultural acceptability were included.

With this more controlled and broader approach, we once again asked whether congruent and incongruent explanations would help to resolve the ambiguity around the problem status of potentially problematic child behaviors, anticipating that congruent explanations would serve a similar function as in Experiment 1, resulting in the congruently explained behaviors overall seeming less problematic than those that were unexplained. In addition to asking whether domain experience with children can temper reliance on explanations in these kinds of ambiguous cases, we also asked if direct experience with similar exemplars predicts problem category judgments. If so, adults in Experiment 2 who have prior experience with similar exemplars might not utilize explanations when making judgments about these dimensions of clinical abnormality, and may instead rely on their prior experience.

**Method**

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6 Additionally, as an attempt to provide a second measure of statistical commonness, a measure of beliefs about the frequency of behaviors was included along with the measure of statistical commonness. However, due to experimenter error, this measure was worded very ambiguously, and furthermore was only presented to parents and not lay adults. Thus, this measure is not reported here.
Participants. Ninety-four parents and 92 lay adults were recruited for Experiment 2. In order to participate, parents were required to have a child between the age of one and six, so as to more closely match the children in the vignettes. Additionally, parents who had extensive experience with children beyond that of caring for their own child were excluded from participation (i.e., years of child experience could not exceed the indicated age of the person’s own child). Lay adults were recruited who were never parents or legal guardians of a child at any given time, had limited experience with children in any setting (e.g., teaching, nanny ing, etc.), and who were of approximately the same age and education level as the parents in Experiment 2. Specifically, adults were recruited in the following categories: ages 19-29 with a high school degree or GED, ages 19-29 with some college education but no more than a college degree, ages 19-29 with some post college education, ages 30-39 with a high school degree or GED, ages 30-39 with some college education but no more than a college degree, ages 30-39 with some post college education, ages 40-50 with a high school degree or GED, ages 40-50 with some college education but no more than a college degree, and ages 40-50 with some post college education. Each group was matched in number to each corresponding group of parents to make sure the full demographic range of age and education levels was captured (see Table 3 for participant information). Parents and lay adults were recruited through the program Amazon Mechanical Turk and paid $1 each for their participation.

Materials. The materials were generally similar to Experiment 1, other than the following changes to the vignettes. In Experiment 1, the vignettes and their congruent and incongruent explanations were piloted using undergraduates. Thus, another pilot study was run on parents and lay people, as follows.
**Pilot study: Check of congruence manipulation.** To ensure that all the congruent and incongruent explanations were in fact perceived as such by the parent and new lay adult populations, we re-piloted the original Experiment 1 vignettes together with five additional, new vignettes, asking a separate group of 14 parents and 14 lay adults to rate how well each congruent and incongruent explanation explained the behavior described in each corresponding vignette. Once again, ratings were made on a scale of 1-9, where 1 = “does not explain them at all,” 9 = “explains them completely,” and 5 = “explains them somewhat.” Each participant provided ratings for both explanation types for all 14 vignettes, for a total of 28 ratings per participant. The order of vignettes was randomized. Once again, for this experimental design, only nine vignettes were needed for the main study, therefore five vignettes were discarded based on having the most similar mean ratings for the congruent and incongruent explanations; however, all 14 vignettes did have significantly different ratings for congruent and incongruent explanations.

Following the results of the pilot, three vignettes utilized in Experiment 1 were removed and three of the new vignettes were included that matched pilot participants’ ratings of the remaining six vignettes in overall content as well explanation content, again resulting in a total of nine vignettes. As desired, for the chosen nine vignettes, congruent explanations ($M = 6.85$, $SE = .23$) were perceived to explain the child behaviors much more completely than the incongruent explanations overall for the parents ($M = 4.09$, $SE = .67$; $t[13]=4.41$, $p = .001$, $\eta^2 = .60$). This was true for all individual vignettes as well (all $p$’s $\leq .022$; all $\eta^2 \geq .24$). Also as desired, for the chosen nine vignettes, congruent explanations ($M = 7.11$, $SE = .33$) were perceived to explain the child behaviors much more completely than the incongruent explanations overall for the lay
adults \( (M = 3.29, SE = .39; t[13] = 11.62, p < .001, \eta^2 = .91) \). This was true for all individual vignettes as well (all \( p \)'s ≤ .038; all \( \eta^2 \) ≥ .40).

**Procedure.** The procedure was nearly identical to Experiment 1 except for the following changes in the dependent measures. Instead of answering a question regarding normality and overall contentment, two questions soliciting judgments about psychological health and future behavioral problems were included. For the psychological health measure, participants read, “What is your first impression of [Cassie]’s current psychological health?” where 1 = very poor and 9 = very good. For the future behavioral problems measure, participants read, “Without intervention, what is the likelihood that [Cassie] will have behavioral problems in the future?” where 1 = highly likely and 9 = highly unlikely. As an additional socio-cultural measure, Experiment 2 also asked more directly and concretely whether people believed the behaviors would result in social difficulties for the child, asking “To what degree would [Cassie] have current social difficulties because of these behaviors?” where 1 = extreme social difficulties and 9 = absolutely no social difficulties. Lastly, to enable a closer examination of the effects of direct experience with children, both parents and lay adults were asked the degree to which their own child or any child they had encountered behaved exactly like each child in the nine vignettes, asking “To what degree has your child (or any child whom you were responsible for caring/interacted with) behaved exactly like [Cassie]?” where 1 = I have never cared for/interacted with a child who behaved like this and 9 = I have cared for/interacted with a child who behaved exactly like and just as intensely as this.

**Results and Discussion**

All analyses were two-tailed and conducted at the \( \alpha = .05 \). We again examined whether, and how, the presence of a congruent explanation (relative to no explanation) influences
perceptions of the three clinically relevant factors: psychological health (i.e., psychological health, likelihood of future behavioral problems), statistical commonness, and socio-cultural effects (i.e., cultural acceptability, likelihood of social difficulties as a result of the children’s behaviors). Given the results of Experiment 1, it was not anticipated any decrease in ratings for the incongruently explained behaviors as compared to the unexplained behaviors. Again, to examine the differences between conditions, the three vignettes presented for each condition were averaged together (i.e., three vignettes presented with congruent explanations, three vignettes presented with incongruent explanations, and three vignettes presented without explanations).

We additionally examined whether prior experience with similar exemplars predicted problem category judgments for each of the five questions. To avoid cross-contamination of the respective influences of prior experience with the exemplars and prior experience with the explanatory information, only the unexplained vignettes (i.e., those without any explanatory information) were included in this secondary analysis. Each of the five question types was examined individually, collapsing across vignettes.

**Main analyses.** For each individual measure, a 3 (Explanation Type: Congruent, Incongruent, No Explanation) x 2 (Experience: Undergraduates, Parents) mixed ANOVA was conducted.

**Psychological health judgments.** For judgments of psychological health, the mixed ANOVA revealed the critical main effect of Explanation Type ($F[2,184] = 15.59; MSE = 1.13; p < .001; \eta^2 = .08$). Following these analyses, Bonferroni-corrected paired-sample $t$-tests were run. Specifically, behaviors presented with a congruent explanation ($M = 5.20, SE = .10$) were judged to be more psychologically healthy than behaviors presented with no explanation ($M = 4.60, SE = .10$).
Judgments of behaviors presented with incongruent explanations ($M = 4.76, SE = .09$) did not differ from judgments of behaviors presented without an explanation ($M = 4.60, SE = .10; p = .103$). Additionally, the congruently explained behaviors were judged to be more psychologically healthy than the incongruently explained behaviors ($t[185] = 3.82; p < .001; \eta^2 = .07$; see Table 5).

As anticipated, congruent explanations increased perceptions of psychological health. Additionally, unlike Experiment 1, in which incongruent explanations resulted in the behaviors seeming more psychologically healthy, incongruent explanations had no effect on behaviors in the current study. The current measure of psychological health is a more applied measure, differing in that respect from the global abnormality measure in Experiment 1, and thereby perhaps leading to less influence by the incongruent explanations in that people can think about psychological health more concretely and can more easily recognize that the incongruent explanations are not actually good explanations for the behavior. In contrast, they may have to think about global abnormality more abstractly, making it more difficult to evaluate the effectiveness of the explanation. These speculations would require further testing.

There was also a main effect of Experience, such that parents’ ratings ($M = 5.03, SE = .10$) across explanation conditions were higher overall than lay adults’ ratings ($M = 4.68; SE = .11; F[1,184] = 5.32; MSE = 3.01; p = .022; \eta^2 = .03$). This suggests that perhaps parents’ experience with children on a day-to-day basis results in an overall upward baseline shift. Importantly, this finding does not suggest that the use of explanation differs between parents and lay adults, and therefore does not support an effect of experience in problem categorization. There were no other significant effects ($p = .968$).
**Future behavioral problem judgments.** For judgments of the likelihood of future behavioral problems, the mixed ANOVA revealed the critical main effect of Explanation Type \( (F[2,184] = 9.89; MSE = 1.53; p < .001; \eta^2 = .05) \). Following these analyses, Bonferroni-corrected paired-sample \( t \)-tests were run.

Behaviors presented with a congruent explanation \((M = 5.40, SE = .12)\) were judged less likely to cause future behavioral problems than behaviors presented with no explanation \((M = 4.83, SE = .11; t[185] = 2.58; p = .011; \eta^2 = .08)\). Behaviors presented with incongruent explanations \((M = 5.05, SE = .10)\) were not judged to differ from unexplained behaviors \((M = 4.83, SE = .11; p = .045)\). Congruently explained behaviors were also judged to result in fewer future problems than the incongruently explained behaviors \((t[185] = 2.58; p = .011; \eta^2 = .04; \text{see Table 5})\). No other main effect or interaction was found (both \( p \)'s > .766). Along with the psychological health measure, this new measure of likelihood for future problems influenced judgments about overall psychological health and well-being, and may also be more directly applied to real-world judgments than the previous, more abstract measure of global psychological abnormality.

**Statistical commonness judgments.** For statistical commonness judgments, the mixed ANOVA revealed a main effect of Explanation Type \( (F[2,184] = 5.24; MSE = 1.72; p = .006; \eta^2 = .03) \). Following these analyses, Bonferroni-corrected paired-sample \( t \)-tests were run.

Behaviors presented with a congruent explanation \((M = 5.58, SE = .11)\) were judged to be more common than behaviors presented with no explanations \((M = 5.18, SE = .10; t[185] = 2.71; p = .007; \eta^2 = .04)\). These findings are quite interesting, as the behaviors with a congruent explanation are in fact a subset of the all the potentially problematic behaviors possible, and are likely less common than those behaviors that are unexplained, suggesting that the influence of
explanation on statistical commonness judgments is quite strong. Behaviors presented with
incongruent explanations ($M = 5.22, SE = .10$) were not judged to differ from those presented
without explanations ($p = .759$), and behaviors presented with a congruent explanation were
judged to be more common than behaviors presented with an incongruent explanation ($t[185] =
2.82; p = .005; \eta^2 = .04$; see Table 5). No other main effect or interaction was found (both $p$’s $> .579$). These results replicate Experiment 1.

**Cultural acceptability judgments.** For cultural acceptability, the mixed ANOVA revealed
the critical main effect of Explanation Type ($F[2,184] = 6.83; MSE = 1.55; p = .001; \eta^2 = .04$).
Following these analyses, Bonferroni-corrected paired-sample $t$-tests were run.

Behaviors presented with a congruent explanation ($M = 5.01, SE = .11$) were judged more
culturally acceptable than behaviors presented with no explanations ($M = 4.55, SE = .11; t[185]
= 3.41; p = .001; \eta^2 = .06$). Behaviors presented with incongruent explanations ($M = 4.67, SE =
.12$) were not judged to differ from those presented without explanations ($M = 4.55, SE = .11; p
= .316$) and behaviors presented with congruent explanations were judged to be significantly
more culturally acceptable than behaviors presented with incongruent explanations ($t[185] =
2.57; p = .011; \eta^2 = .04$; see Table 5). These results provide clear evidence that the influence of
explanations, when reasoning about the cultural acceptability of ambiguous child behaviors, did
not differ across levels of domain experience. This is an important finding, as it differs from the
interaction found in Experiment 1, a point that will be discussed more thoroughly in the
following sections.

Additionally, there was a main effect of Experience, as was also found in the
psychological health measure. Parents’ ratings ($M = 4.91, SE = .11$) were higher overall than lay
adults’ ratings ($M = 4.58, SE = .11; F[1,184] = 4.64; MSE = 3.43; p = .033; \eta^2 = .03$). However,
again, this finding does not support an effect of experience on problem categorization judgments. There was no interaction of Explanation Type and Experience ($p = .189$).

This set of results differs slightly from those of Experiment 1, in which parents were uninfluenced by explanations for the cultural acceptability measure. In Experiment 1, a disproportionately large proportion of the parents were sampled from a single community in California through a parenting newsletter, whereas in the current study, parents recruited from all over the country participated. In this way, the results of the current study may more accurately capture U.S.-based parent judgments for this measure. Importantly, the interaction found in Experiment 1 for the cultural acceptability measure was the only one of the nine measures, across Experiments 1 and 2, for which any interaction was present. Taken together, these findings suggest that the interaction found in Experiment 1 may not be reliable, and that the current results again suggest that overall the use of explanation does not differ across levels of domain experience. This issue is returned to once more in Experiment 3.

**Social difficulty judgments.** Lastly, for social difficulty judgments, the mixed ANOVA also revealed a main effect of Explanation Type ($F[1,184] = 3.21; MSE = 1.16; p = .042; \eta^2 = .02$). Following these analyses, Bonferroni-corrected paired-sample $t$-tests were run.

The behaviors of the children presented with a congruent explanation ($M = 4.85, SE = .09$) were judged to cause fewer social difficulties than those with no explanations ($M = 4.59, SE = .09; t[185] = 2.21; p = .028; \eta^2 = .04$). Behaviors presented with incongruent explanations ($M = 4.62, SE = .09$) were not judged to differ from those presented without explanations ($M = 4.59, SE = .09; p = .788$) and behaviors presented with congruent explanations were judged to result in fewer social difficulties than incongruent explained behaviors ($t[185] = 2.06; p = .041; \eta^2 = .02$; see Table 5). No other main effect or interaction was found (both $p$’s > .721). These results, taken
together with the results of Experiment 1, suggest that explanations influence a range of socio-cultural judgments.

**Degree of direct experience.** Correlational analyses were conducted to examine whether prior experience with similar exemplars predicted problem category judgments for each of the five measures (i.e., psychological normality/health, future behavioral problems, statistical commonness, cultural acceptability, and social difficulties). Again, both parents and lay adults were asked to rate their degree of prior experience with each of the behaviors depicted in the nine behavioral vignettes on a 1-9 scale and these ratings were correlated with the ratings from each of the five measures. The only participant ratings that were made independently of provided explanations were, of course, in the condition in which no explanation was provided. Thus, to get the clearest picture of how past experience with similar exemplars influences problem category judgments, we conducted this analysis on the ratings from the (within-participant) no explanation condition only.

Prior exemplar experience was significantly correlated with ratings of psychological health ($r = .180, p = .007$), statistical commonness ($r = .239, p = .001$), and cultural acceptability ($r = .180, p = .007$). Specifically, having had more prior experience with similar exemplars predicted viewing the child behaviors as more healthy, more common, and more culturally acceptable. Ratings for future behavioral problems and social difficulties were not significantly predicted by prior experience with similar exemplars (both $p$’s $\geq .141$).

The results of Experiment 2 expand the scope of the previous findings; with the more accurately normed vignettes, better-controlled comparison participant group, and broader measures utilized in Experiment 2, a similar pattern of results was seen across all five judgments, such that congruently explained behaviors were seen as more psychological healthy, as less
likely to result in future behavioral problems, as more common, more culturally acceptable, and as resulting in fewer social difficulties. Taken together, these findings support the hypothesis that the congruent explanations result in the potentially problematic behaviors appearing less problematic than when those behaviors are unexplained.

Once again, no support was found for the possibility that incongruent explanations push behaviors from ambiguous status into problem category status. Additionally, all congruently explained behaviors were seen as less problematic than incongruently explained behaviors, and overall, ratings for the incongruently explained behaviors did not differ from those for the unexplained behaviors. Perhaps the more appropriate norming procedure of the congruent and incongruent explanation types with both experience populations in the current experiment resulted in the lack of replicating the finding that incongruent explanations can normalize behaviors, as in Experiment 1. Although the irrelevant information provided by the incongruent explanations did not influence problem category judgments, perhaps the influence of incongruent explanations that would be expected to cause the exact opposite behavior should be tested in future research. For example, consider again Cassie, who has reverted to using a baby bottle. If one were to learn that Cassie’s friends at school had begun making fun of her for using a bottle, this might most reasonably lead one to predict the very opposite of Cassie’s actual behaviors (e.g., one would think Cassie would be *more* inclined to *not* drink out of a bottle), resulting in the behaviors seeming even more problematic. Our previous work (Yopchick & Kim, 2012) suggests that this may very well be the case; outcomes that could better be explained by the very opposite of the provided explanation were seen as more surprising and harder to understand.

Additionally, the results of Experiment 2 suggest that even after controlling for age and education level, domain experience with children does not reduce the use of explanations to
inform problem category judgments relative to not having such domain experience. The interaction of experience and explanation found in Experiment 1 for the cultural acceptability measure was not replicated in Experiment 2.

However, the results of the correlation analyses in Experiment 2 did provide partial support that prior experience with similar behaviors predicts problem category judgments. The degree to which participants reported having had encountered similar behaviors to the children in the vignettes predicted whether they perceived the behaviors in the vignettes as more psychological healthy, more common, and more culturally acceptable. This suggests that specific experience with the behaviors in question may play a larger role than simply having domain experience. The finding that prior experience with the behaviors did influence judgments about psychological health, statistical commonness, and cultural acceptability may relate to the fact that these judgments require direct assessment of current behaviors, whereas future behavioral problems and social difficulties require a prediction of behaviors that have yet to occur (future behaviors being problematic and future social situations). Perhaps, then, people feel that their prior experience with similar behaviors strongly informs direct behavior assessment, but less so for behavior predictions. Importantly, however, although correlation analyses were run on only those behaviors that were unexplained, there may still have been cross contamination from the congruent and incongruent explanations, as all three explanation conditions were presented within-participant. A cleaner test will be necessary in reexamining the influence of prior exemplar experience on problem category judgments, an issue that will be addressed in Experiment 3.

Taken together, the results of Experiment 1 and 2 provide the first evidence that congruent explanations can help to disambiguate child behaviors of uncertain problem status,
resulting in the behaviors seeming less problematic than when unexplained. These findings suggest one possible mechanism for why it is that adults, as documented in the child developmental literature, may be overlooking potentially problematic behaviors, viewing them as normal (Yeh & Weisz, 2001). We suggest that when adults are presented with an appropriate explanation for these kinds of ambiguous behaviors, they feel that they understand the behaviors better, leading them towards a perception of normalcy. However, the current investigation has yet to directly test whether increases in perceived understanding really drive this effect in reasoning about children’s ambiguous behaviors. Recent work investigating adult disordered behaviors found correlational evidence that perceived understanding predicts perceived normalization of behaviors (see Kim et al., 2011). Experiment 3 set out to examine the influence of understanding on ambiguous child behaviors with a novel approach.

**Experiment 3**

Experiments 1 and 2 assessed the influence of explanation on ambiguous child behaviors by providing parents and lay adults with carefully crafted explanations intended to either help make sense of the behaviors (i.e., the congruent explanations that were plausible, proportionate, and outside of the child’s control) or elicit no such increase in understanding (i.e., the incongruent explanations). Experiment 3 asked instead if parents and lay adults are able to generate their own explanations for these kinds of behaviors, and if so, whether these self-generated explanations influence judgments about the problem status of the behaviors. In the real world, it is unlikely that adults are always provided with explanations for these kinds of behaviors; in many cases, it is likely that adults must reason through these behaviors themselves, generating explanations on the fly to assist their judgments about problem status.
It has previously been argued that explanations are perceived to be useful only to the degree that they increase the perceived understanding of behaviors (e.g., Kim et al., 2011; Thagard, 1989). As reviewed earlier, explanations that are life events outside of the individual’s control, are plausible, and are proportionate to the behaviors in both strength and valence, have been shown to both increase perceptions of normality and increase perceived understanding. Conversely, implausible and internal or biological explanations tend to be more poorly understood and do not appear to affect perceptions of normality (Ahn et al., 2003; Kim & LoSavio, 2009; Kim et al., 2011; Kim et al., 2012). However, it is not yet clear whether there is anything special about life-event status, external control, plausibility, and proportionality, or whether these factors simply tend to characterize explanations that people generally feel increases their understanding of behaviors. Specifically, when adults generate their own explanations, it is unclear whether self-generated explanations also have these same properties, or whether these specific explanation characteristics are not as important as the overall increased feelings in understanding in eliciting normalized judgments of behaviors. By asking adults to generate their own explanations to help make sense of these ambiguous child behaviors in the current experiment, we are presenting a unique opportunity to examine what types of explanations promote greater understanding of behaviors. Moreover, for the first time, we can test whether any self-generated explanation that the person feels increases his or her own understanding of the behaviors results in the perception that the behaviors are normal, regardless of any other characteristic of that explanation (i.e., whether it is external, plausible, etc.).
Additionally, Experiment 3 included a measure of people’s perceptions of the need for intervention, asking how much people thought the child’s behaviors needed to be changed. As previously discussed, the issue of getting children the intervention they need in a timely manner is critical for normal child development (Miller, 1995). Work by Kim and LoSavio (2009) suggests that explanations influence perceptions of need for intervention in addition to perceptions of psychological normality for clearly disordered adult behaviors, such that well-explained behaviors are viewed as being less in need of treatment. However, other work assessing recommendations for treatment in children with conduct disorder (Wakefield et al., 2002) suggests that having a contextual explanation for the behaviors does not diminish the perceived need for psychological intervention. Specifically, Wakefield and colleagues (2002) found that although explanations did affect whether the conduct related behaviors were seen as disordered or not (i.e., internally caused behaviors were perceived as a psychological disorder while externally caused behaviors were not), all behaviors were judged to be equally in need of treatment. Therefore, assessing whether explanations have an influence on the perceived need for intervention judgments for more ambiguous kinds of children’s behaviors is an important next step for understanding the full problem categorization process. If explanations do exert an influence on perceptions of need for intervention in ambiguous cases, then potentially problematic behaviors may be overlooked as requiring intervention at the necessary time in development.

Lastly, to assess whether generating explanations for these kinds of ambiguous behaviors was an easy task to do, and if, as instructed, the generated explanations actually lead to the

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7 Note that as these behaviors are not clearly problematic, it would be misleading to ask specifically if the behaviors needed treatment or intervention, as this question alone may indicate that the behaviors are more severe and should be considered for treatment. As such, we chose to ask a more general question of “need for change.”
behaviors seeming easier to understand, adults who generated explanations were asked for the ease of which they were able to generate these explanations as well as how easy or difficult it was to understand the potentially problematic behaviors, given their generated explanations.

In sum, Experiment 3 is designed to offer more direct insight into the problem category judgments of adults as the judgments might be expected to be made under more realistic conditions. Specifically, if adults are able to generate their own explanations for these kinds of behaviors, and if they believe those generated explanations help them to understand these potentially problematic behaviors better, the behaviors may ultimately be seen as less problematic than without a generated explanation. If however, adults are unable to generate these kinds of explanations, or if their generated explanations do not increase their perceived understanding, the behaviors will likely be perceived to be just as problematic as when no explanation is generated.

**Method**

**Participants.** New samples of 143 parents (71 in the Explanation Condition, 72 in the Control Condition) and 119 lay adults (58 in the Explanation Condition, 61 in the Control Condition) were recruited for Experiment 3. All parents had a child between the ages of one and six at the time of participation, and had no other extensive experience with children. Parents were excluded who had any children above the age of ten, so as to more closely tap into direct experience with young children. Lay adults were again recruited who were never parents or legal guardians of a child at any given time, had no additional experience with children, and who were broadly matched by age and education level to the parents in this experiment. As in Experiment 2, adults were recruited in the following categories: ages 19-29 with a high school degree or GED, ages 19-29 with some college education but no more than a college degree, ages 19-29
with some post college education, ages 30-39 with a high school degree or GED, ages 30-39 with some college education but no more than a college degree, ages 30-39 with some post college education, ages 40-50 with a high school degree or GED, ages 40-50 with some college education but no more than a college degree, and ages 40-50 with some post college education. Each group of lay adults was matched as closely as possible in number to the parents to verify that the full demographic range of age and education levels was captured (see Table 3 for participant information). Parents and lay adults were recruited through the program Amazon Mechanical Turk and paid $1 each for their participation. Participants were not allowed to partake in Experiment 3 if they had participated in any prior experiment and were explicitly told in the recruiting advertisement that they were unable to participate if they had taken a previous survey; any participants with crossover in content and IP addresses between experiments were excluded.

**Materials and procedure.** The materials were identical to Experiment 2, except that the congruent and incongruent explanations were not utilized. Once again, participants completed the task on the online survey program Qualtrics. In Experiment 3, there were now two between-subjects conditions: the Explanation Condition and the Control Condition. In the Explanation Condition, participants were instructed after reading each individual behavioral vignette to “please provide an explanation that helps you to understand the behaviors better.” They were presented with a box in which to type their generated explanation. Once the explanation had been generated, participants moved on to answering all dependent measure questions about that particular vignette before moving on to the next vignette. In the control condition, participants were also asked to read each vignette, but were not requested to provide any additional information. Half of the recruited parents were randomly assigned to the Explanation Condition
and half to the Control Condition; the same was carried out for the lay adults. Participants were asked to assess problem status by responding to the questions from Experiment 2, in addition to three new questions. The first additional question asked how much the behaviors indicated a need for change or intervention, asking, “To what degree do [Cassie]’s behaviors need to be changed?” where 1 = behaviors need to be changed completely and 9 = behaviors do not need to be changed. The second and third additional questions were only administered to those participants who were asked to generate explanations (i.e., those in the Explanation Condition), and were presented specifically to assess participants’ perceived ease of generating the explanations and how well participants felt the self-generated explanations increased their own understanding of the behaviors. For ease of generation, participants were asked, “How easy or difficult was it to provide an explanation for [Cassie]’s behaviors?” where 1 = very difficult and 9 = very easy. For level of understanding, participants were asked, “Given the explanation you provided, how easy or difficult is it for you to understand [Cassie]’s current behaviors?” where 1 = very difficult to understand and 9 = very easy to understand (see Table 4 for the exact wording of each question).

Following data collection, two independent coders coded each of the nine explanations provided by the 129 participants in the Explanation Condition (71 parents, 58 lay adults) as either a life/external explanation (i.e., something about child's environment, such as parents, siblings, school, etc., or something that happened to the child, such as family trauma, punishment, moved to a new town, hit by classmate, etc.), a biological/internal explanation (i.e., something about the child’s character, personality, etc., or something about the brain or biology of the child, such as a neurological problem, psychological disorder, chemical imbalance, etc.), or other (i.e., unable to be classified in either category; for example, statements such as “lovely
“lily” with no further explanation). In total, therefore, 1,161 individual explanations were coded. Consensus was moderate between raters (72.5% agreement for parent explanations and 67.4% agreement for lay adult explanations), and all discrepancies were resolved by discussion.

Additionally, to assess the overall plausibility of the generated explanations as well as proportionality of the generated explanations to the behavioral vignettes, a separate, small group of participants (N=5) independently rated each of the nine behavioral vignettes and 1,161 generated explanations on the following measures: plausibility (i.e., completely implausible to completely plausible), lack of extremity (i.e., very extreme to very mild), and positivity (i.e., very negative to very positive), with the overall goal of assessing whether the generated explanations were overall plausible and whether they were matched or mismatched in strength and valence to the behavioral vignettes. Ratings across all five raters were highly reliable (all Cronbach’s alphas > .602; see Table 6 for the exact wording of each question).

**Results and Discussion**

We first examined whether adults would be able to generate explanations for these ambiguous child behaviors, and if so, whether these self-generated explanations (as compared to no explanations) would globally affect perceptions of psychological health, likelihood of future behavioral problems, statistical commonness, cultural acceptability, likelihood of social difficulties, and need for change of the children’s behaviors. Each of the six question types was examined individually, collapsing across vignettes. Secondary analyses again examined the predictive relationship between prior experience with similar exemplars and each of the six question types for both the control and explanation conditions. All analyses were two-tailed and conducted at the \( \alpha = .05 \) level.
Next, how easy adults felt it was to generate explanations for these kinds of behaviors was assessed. Lastly, we tested whether content, perceived understanding, and explanation type were predictive of problem category judgments. The content of the generated explanations and behaviors (i.e., plausibility and proportionality), the degree of self-reported perceived understanding of the behaviors (i.e., increased understanding and ease of generating an explanation), as well as the explanatory type of the generated explanations (i.e., external, internal, and other) was examined to assess the degree to which these factors predicted judgments about psychological health/normality, statistical commonness, and socio-cultural effects.

**Main analyses.** A 2 (Condition: Explanation, Control) x 2 (Experience: Lay Adults, Parents) univariate ANOVA was conducted for each individual measure.

*Psychological health judgments.* For judgments of psychological health, the univariate ANOVA revealed the critical main effect of Condition ($F[1, 260] = 14.06; MSE = 1.30; p < .001; \eta^2 = .05$), such that adults who were asked to generate explanations ($M = 5.20, SE = .10$) judged the behaviors to be significantly more psychologically healthy than those adults who did not generate explanations ($M = 4.67, SE = .10$; see Table 7). There were no other main effects or interactions (both $p$’s > .188). These results are similar to those found in the more controlled Experiment 2, in which congruent explanations also resulted in the behaviors seeming more psychologically healthy.

*Future behavioral problem judgments.* For judgments regarding future behavioral problems, the univariate ANOVA revealed the critical main effect of Condition ($F[1, 260] = 6.09; MSE = 1.69; p = .014; \eta^2 = .02$), such that adults who were asked to generate explanations ($M = 5.01, SE = .11$) judged the behaviors to cause fewer future behavioral problems than those
adults who did not generate explanations ($M = 4.61, SE = .11$; see Table 7). There were no other main effects or interactions (both $p’s > .538$). These results are similar to the findings in Experiment 2, such that behaviors are seen as less likely to result in future behavioral problems with a generated explanation. Taken together with the psychological health results, these findings suggest that a generated explanation that one feels increases one’s own understanding is enough to make potentially problematic behaviors appear more normal and healthy.

**Statistical commonness judgments.** For statistical commonness judgments, the univariate ANOVA revealed the critical main effect of Condition ($F[1, 260] = 11.67; MSE = 1.18; p = .001; \eta^2 = .04$), such that adults who were asked to generate explanations ($M = 5.70, SE = .09$) judged the behaviors to be more common than those adults who did not generate explanations ($M = 5.24, SE = .10$). There were no other main effects or interactions (both $p’s > .248$; see Table 7). As with the psychological health/normality measures, the act of generating explanations that one feels increases one’s own understanding also results in potentially problematic behaviors seeming more common than when an explanation is not generated. Importantly, the influence of explanations on judgments of statistical commonness has been found consistently across all three experiments. Whether the explanation that promoted perceived understanding was provided or self-generated, the behaviors were reliably seen as more common across studies.

**Cultural acceptability judgments.** For cultural acceptability judgments, the univariate ANOVA revealed the critical main effect of Condition ($F[1, 260] = 5.68; MSE = 1.66; p = .018; \eta^2 = .02$), such that adults who were asked to generate explanations ($M = 4.74, SE = .12$) judged the behaviors to be more culturally acceptable than those adults who did not generate explanations ($M = 4.36, SE = .11$; see Table 7). There were no other main effects or interactions (both $p’s > .264$). The absence of an interaction found here mirrors the results of Experiment 2
rather than Experiment 1. This supports the earlier argument that the findings in Experiment 1 were likely the result of using a single, homogeneous sample of parents. The findings in Experiment 2 and now in the current study were based on a much more varied parent sample (in terms of location and community), and therefore, we suggest, are more reflective of judgments made by the population of parents in the U.S.

*Social difficulties judgments.* For social difficulty judgments, the univariate ANOVA again revealed the critical main effect of Condition \( (F[1, 260] = 5.44; \text{MSE} = 1.28; p = .020; \eta^2 = .02) \), such that adults who were asked to generate explanations \( (M = 4.83, SE = .10) \) judged the behaviors to cause fewer social difficulties than those adults who did not generate explanations \( (M = 4.51, SE = .10; \text{see Table 7}) \). There were no other main effects or interactions (both \( p's > .567 \)). Once again, self-generated explanations lead to perceptions of a lower likelihood of negative socio-cultural effects for these kinds of potentially problematic behaviors. These results replicate the findings in Experiment 2, where well-explained behaviors were seen as less likely to result in social difficulties.

*Need for change judgments.* And lastly, for need for change judgments, the univariate ANOVA revealed the critical main effect of Condition \( (F[1, 260] = 4.95; \text{MSE} = 1.71; p = .027; \eta^2 = .02) \), such that adults who were asked to generate explanations \( (M = 4.07, SE = .11) \) judged the behaviors to be less in need of change than those adults who did not generate explanations \( (M = 3.70, SE = .11; \text{see Table 7}) \). There were no other main effects or interactions (both \( p's > .450 \)). Even perceptions of need for change were affected simply by generating an explanation, such that generated explanations resulted in the behaviors seeming less in need of change. This finding is particularly important, as it suggests one possible reason why adults sometimes fail to seek out treatment for their child's behavioral problems.
**Degree of direct experience.** Correlational analyses were conducted to examine whether prior experience with similar exemplars predicted problem category judgments for both parents and lay adults, for each of the six measures (i.e., psychological health, future behavioral problems, statistical commonness, cultural acceptability, social difficulties, and need for change). As in Experiment 2, both parents and lay adults were asked to rate their degree of prior experience with each of the behaviors depicted in the nine behavioral vignettes on a 1-9 scale and these ratings were correlated with the ratings from each of the six above measures (see Table 4). To again get the clearest picture of how prior exemplar experience influences problem category judgments, analyses were conducted only on the (between subject) no explanation control condition. Prior exemplar experience predicted ratings of psychological health ($r = .371, p < .001$), future behavioral problems ($r = .225, p = .005$), statistical commonness ($r = .335, p < .001$), cultural acceptability ($r = .337, p < .001$), social difficulties ($r = .218, p = .006$), and need for change ($r = .386, p < .001$). Specifically, having more prior experience with similar exemplars predicted viewing the child behaviors as more healthy, less likely to result in future behavioral problems, more common, more acceptable, resulting in fewer social difficulties, and being less in need of change.

**Explanation Analyses**

**Explanation generation measures.** For the Ease of Generation measure, parents who generated explanations ($M = 5.84, SE = .18$) did not differ from lay adults who generated explanations ($M = 6.01, SE = .16; p = .470$) with respect to how easily they felt they were able to do so. Both parents and lay adults also rated their ease of generation above the midpoint (both

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8 Note that the same pattern of results was found for the explanation condition data (all $p$’s < .043).
p’s < .001). Taken together, these findings suggest that the self-generated explanations were overall easy to generate.

**Multiple regression.** Stepwise multiple regression analyses were conducted to examine whether level of understanding of the behaviors/ ease of generation, how plausible the behaviors are, and how proportionate the behaviors and explanations are in strength and valence predict whether or not behaviors are seen as problematic. A separate regression was performed for each of the six measures of problem status (i.e., psychological health, future problems, statistical commonness, cultural acceptability, social difficulties, and need for change). In Experiment 3, participants were asked both how well the self-generated explanations increased their level of understanding as well as how easy the explanations were to generate. As these two measures involved highly conceptually similar questions ($r = .858, p < .001$), a composite, averaged score of the two measures was used in these multiple regression analyses, a factor which will simply be referred to as “level of understanding.” Ratings for level of understanding were provided by the participants themselves (i.e., self-rated) for each generated explanation, whereas the measures of plausibility and proportionality were rated for each individual explanation by a set of additional participants (i.e., other-rated), as described earlier.

Level of understanding predicted ratings of psychological health ($\bar{r} = .470, t(1) = 6.00, p < .001$), future behavioral problems ($\bar{r} = .390, t(1) = 4.77, p < .001$), statistical commonness ($\bar{r} = .435, t(1) = 5.45, p < .001$), cultural acceptability ($\bar{r} = .311, t(1) = 3.69, p < .001$), social difficulties ($\bar{r} = .362, t(1) = 4.37, p < .001$), and need for change ($\bar{r} = .281, t(1) = 3.30, p = .001$). Level of understanding also explained a significant proportion of variance in ratings for psychological health ($R^2 = .021, F(1, 127) = 35.97, p < .001$), future behavioral problems ($R^2 = .152, F(1, 127) = 22.75, p < .001$), statistical commonness ($R^2 = .189, F(1, 127) = 29.67, p < .001$), future behavioral problems ($R^2 = .223, F(1, 127) = 34.07, p < .001$), and need for change ($R^2 = .231, F(1, 127) = 35.24, p < .001$).
.001), cultural acceptability ($R^2 = .097, F(1, 127) = 13.64, p < .001$), social difficulties ($R^2 = .131, F(1, 127) = 19.10, p < .001$), and need for change ($R^2 = .079, F(1, 127) = 10.85, p = .001$; see Table 8). Outside observers’ perceptions of plausibility, proportionality in strength, and proportionality in valence were not significant predictors in any of the multiple regression models (all $p$’s $> .080$). These results support the claim that perceived understanding of behaviors is the critical factor in the normalization of potentially problematic behaviors.

**Explanation type.** To examine whether the content of the self-generated explanations influenced problem category judgments, each individual generated explanation was coded for explanation type (i.e., internal, external, or other). Lay adults provided equal numbers of internal explanations ($N = 216$) and external explanations ($N = 219; p = .920$); however, parents provided significantly more internal explanations ($N = 312$) than external explanations ($N = 184; \chi^2(1, 496) = 16.8, p < .001$). Following this coding, for each individual participant, each vignette was labeled as being either an internally explained vignette, an externally explained vignette, or an “other” explained vignette, for all nine vignettes. Using this coding, the ratings for each of the six dependent measures (i.e., psychological health, future problems, statistical commonness, cultural acceptability, social difficulties, and need for change) were averaged for all the internally explained vignettes, for all the externally explained vignettes, and for all the “other” explained vignettes, again for each individual participant (e.g., for each participant, the psychological health ratings for the internally explained vignettes were averaged, the psychological health ratings for the externally explained vignettes averaged, the statistical commonness ratings for the internally explained vignettes were averaged, and so on). As there were overall very few “other” explained vignettes, those data were left out of the following analyses. Averaging the ratings in this way resulted in six individual Bonferroni-corrected
paired-sample $t$-tests between the internally explained vignettes and the externally explained vignettes for each measure; the comparisons revealed no significant differences in explanation type across any of the measures (all $p$’s > .162). Specifically, the explanation type of the self-generated explanations had no influence on problem category judgments. Given these results and the multiple regression results, we suggest that perceived understanding seems to be the real underlying factor driving the normalization of behaviors.

The results of Experiment 3 provide new evidence that self-generated explanations influence perceptions of the problem status of ambiguous child behaviors. After asking adults to generate explanations that they felt increased their own understanding of the behaviors, a clear reduction in ratings of the problematic nature of the behaviors was seen. For both parents and lay adults who generated explanations, the behaviors were seen as more psychological healthy, as causing fewer future behavioral problems, as being more common, as more culturally acceptable, and as causing fewer social difficulties as compared to the adults who did not generate explanations for these behaviors. Importantly, self-generated explanations also resulted in the behaviors seeming less in need of intervention as compared to unexplained behaviors, unlike previous findings (Wakefield et al., 2002) where all behaviors, regardless of problem status, were seen as being in need of treatment. The results suggest that perhaps when the behaviors are ambiguous and not clearly problematic, the benefit of intervention is less clear and therefore is not deemed as necessary as when the behaviors are well understood.

Self-generated explanations resulted in problematic behaviors seeming less problematic regardless of the generated explanation content (i.e., internal or external), the plausibility of the generated explanations, or whether the generated explanations were proportionate in strength and valence to the behavioral vignettes. Critically, the only factor that significantly predicted
problem category judgments was perceived understanding of the behaviors given the self-generated explanation. Therefore, the current results provide the first evidence that only perceived understanding of the behaviors, and not explanation type, outside perceptions of plausibility, or outside perceptions of proportionality, predicts problem category judgments about the behaviors. In previous, controlled experimental research, explanation type, plausibility, and proportionality were shown to influence the normalization of disordered behavior. What we believe the current findings suggest is that this apparent influence was actually the result of these factors being more likely to elicit feelings of understanding, and not the specific content of the explanations. Therefore, the current work does not necessarily negate these previous findings, but rather provides a more parsimonious, overarching explanation for why certain factors led to perceive normalization of problem behaviors in previous work; ultimately, they are likely to lead to greater feelings of understanding.

Additionally, the current study provides concrete evidence that direct experience with the behaviors in question can predict that the behaviors will seem less problematic. For those adults who had encountered children acting in a similar way to the children in the vignettes, regardless of whether an explanation was generated or not, the behaviors seemed less problematic. Whereas the overall domain experience of parents does not affect problem category judgments in a way that sets parents apart from adults without children, these findings suggest that direct experience with the specific behaviors does play a key role in assessing problem status. This is an important extension of previous work, as it suggests that specific exemplar information, in addition to explanations, may play a critical role in the normalization problem of problem behaviors.
General Discussion

The current experiments provide the first evidence that explanations have a strong influence on problem category judgments for ambiguous exemplars. The novel contributions of this work are discussed below in the context of the three core aims in the current work.

Aim #1: To Examine the Influence of Explanations in Problem Category Judgments

In Experiments 1 and 2, when a child’s ambiguous behavior was accompanied by a congruent explanation for that behavior, the behavior was perceived as less problematic by appearing more psychologically healthy and normal, more statistically likely, and as having less negative socio-cultural effects as compared to unexplained behaviors. Particularly interesting is the finding that congruently explained behaviors were seen as more statistically common than were unexplained behaviors, even though the congruently explained behaviors were a subset of the unexplained behaviors, again pointing to a strong influence of explanations on statistical commonness judgments. The current work also provides the first evidence that incongruently explained ambiguous child behaviors are not seen as more pathological and problematic than unexplained behaviors. Overall, the incongruent explanations had little to no effect on perceptions of the problematic nature of behaviors. As it is unlikely that adults have extensive experience utilizing or generating explanations that do not help to make sense of the behaviors in question, the incongruent explanations may have simply been ignored, as they did not help to resolve any ambiguity. Additionally, the lack of any influence of the incongruent explanations on problem category judgments in the methodologically improved Experiment 2 suggests that the specific incongruent explanations utilized in the current work have no influence on problem category judgments. This suggests that explanations are only useful to the degree that they
increase feelings of understanding (Thagard, 1989), a point that will be discussed further below as it relates to the third aim.

Specifically with regard to the first aim, we showed that explanation influences the assessment of highly specific, non-pathological (in the sense that they are not DSM-disordered) behaviors that were designed to be relatively ambiguous as to whether or not they indicated a problem. The behaviors presented were rather bizarre, yet highly realistic in the sense that they were closely modeled on real-world parents’ descriptions of actual children. Expanding on prior work on the effects of explanations in reasoning about problem categories, the presence of a causal explanation (see below) for children’s potentially problematic behaviors systematically affected problem categorization judgments.

In the current studies, participants were not provided with the mechanism for how the explanation led to the behaviors. As participants may have been able to causally connect the incongruent explanation to the behaviors in some way, a better test in future work would be to examine an incongruent explanation that would most reasonably be expected to cause a behavior that is the exact opposite of the one presented in the vignettes. Consider again the previous example with Cassie, where the behavior of wanting to drink out of a bottle again might be seen as more problematic if the provided information was that Cassie was recently rewarded for using her big-girl cup. Relatedly, previous work by Yopchick and Kim (2012) suggests that when the provided explanation for an event seems as though it should have been more likely to lead more to the opposite occurrence, the actual event is seen as less likely to occur. In fact, Kim et al. (2012) examined the influence of a similar kind of cause-effect mismatch on reasoning about adult disordered behaviors. When a traumatic life event was provided as an explanation for the occurrence of everyday behaviors, people perceived the behaviors themselves as highly
abnormal. Future studies will be needed to examine if reasoning about ambiguous child behaviors is similarly affected by these kinds of opposing incongruent explanations.

**Aim #2: To Jointly Examine the Role of Experience and Explanation in Problem Category Judgments**

Regarding the second aim, the findings suggest that general domain experience does not appear to attenuate reliance on explanations in making problem categorization judgments for ambiguous cases. Adults with domain experience in reasoning about children’s behaviors (i.e., parents) and adults who had little to no domain experience reasoning about children’s behaviors generally did not differ in the use of explanations to inform problem categorization judgments. The general experience of being a parent and interacting with children in the real world does not seem to lead parents to circumvent the use of explanatory information in making judgments about children’s potentially problematic behaviors, which might be considered to be surprising, as one might imagine that the kind of experience that parents have might generally lead them to use their own experiential knowledge rather than a provided explanation. In other words, it appears that explanation is a powerful cue to problem status, such that regardless of additional experience in the domain, explanatory information still influences whether a behavior is seen as a problem or not.

Importantly, however, we did find evidence that *direct experience with similar exemplars* influences problem category judgments. For adults both with and without general domain experience (i.e., parents and lay adults), if the specific behaviors in question had been encountered previously in specific exemplars, the behaviors seemed overall less problematic. These findings provide partial support for the influence of experience on problem category judgments and they suggest that exemplar information may also play a key role in the problem
categorization process. Of course, it remains possible that these adults have already generated explanations for those behaviors (e.g., back when they encountered those specific exemplars), and that explanations did in fact influence judgments in these cases as well. Future studies will be necessary to carry out a more controlled examination of this issue, and to more broadly assess the relative roles of exemplar and explanatory information in problem categorization.

The current work focused on the domain experience of parents, as parents are perhaps the most critical population to study with respect to the well-being of children with behavioral problems. Parents are ultimately the ones making decisions about a child’s welfare, and they have extensive interactions with their own children. Importantly, however, when considering children’s behaviors, there are additional kinds of experience not addressed in the current project that may play an important role in problem behavior assessment. In particular, teachers, pediatricians, and any other childcare workers who come into contact with children on a regular basis may have substantial experience with children that differs in key ways from the parental experience. Whereas parents may have a lot of experience with one or two children in multiple situations, childcare workers and pediatricians see many different children in a very limited context. It remains for future studies to examine whether having certain kinds of domain expertise or experience can predict reliance on exemplar and frequency information as compared to reliance on explanations.

**Aim #3: To Examine the Influence of Self-Generated Explanations on Problem Category Judgments**

Perhaps the most novel contribution of the current work is the findings regarding the third aim; adults used their own generated explanations to resolve the ambiguity around potentially problematic child behaviors, regardless of whether their explanations were viewed as plausible,
proportionate in strength, or proportionate in valence by outside reasoners. Experiment 3, in which adults were asked to generate their own explanations for ambiguous child behaviors, found that the child behaviors were seen as less problematic for the adults who generated explanations than for adults who did not generate explanations. These findings show that plausibility (as rated by others) is not a necessary characteristic of explanations for this normalization process; self-generated explanations that the reasoner believes increases his or her own understanding of the behaviors influence problem category judgments. Additionally, we were interested in whether the specific content of the self-generated explanations would affect problem category judgments for these ambiguous behaviors. Critically, generated explanations, regardless of content, lead to the behaviors seeming less problematic across all measures.

Whereas previous work investigating the normalization of behaviors as a result of explanations has shown that only certain types of explanations result in behaviors seeming less problematic, the current work suggests, in line with the arguments of Kim et al. (2012) that it is not the specific content of the explanation that matters, but the reasoner’s perceived understanding of the behavior by virtue of having generated the explanation.

Previous work (Ahn et al., 2003) found that implausible and internal/biological explanations did not result in the normalizing effect that was found when plausible, external or life event explanations were provided for severe adult disordered behaviors. In the current work, when adults were asked to generate their own explanations for ambiguous child behaviors, explanations of all kinds were generated -- external and internal. The analyses suggest that other-rated plausibility did not predict problem category judgments about the behaviors, and that both external/life event and internal/biological self-generated explanations led to the behaviors seeming less problematic. We believe that the key that reconciles these new findings with past
work is that in the current study, the degree to which adults judged their own self-generated explanations as making the behaviors easier to understand predicted the degree to which they also normalized the behaviors. Even adults who generated biological explanations, for example, who felt they understood the behaviors better after generating the explanation (whether or not they actually have knowledge of the exact biological mechanism), normalized the behaviors accordingly, and this suggests that the feeling of understanding is critical to eliciting perceived normalization of behaviors.

Previous findings in the developmental and clinical domain suggests that adults’ explanations for children’s problem behaviors are rather complex, with internal explanations provided in some cases and external in others. Studies examining adult attributions about children’s behaviors have shown both that parents give more internal explanations for children’s negative behaviors than children give to the same behaviors (Compas et al, 1982; Furnham & Weir, 1996) and that parents tend to give more external explanations for negative child behaviors than for positive behaviors (Gretarsson & Gelfrand, 1988; Miller, 1995). Work by McNab, Haslam, and Burnett (2007) also finds that particular parental characteristics lead to different patterns in providing internal and external explanations for children’s behaviors (e.g., parents who were rated as being highly critical in their expressed emotion relating to their child’s psychotic illness tended to perceive the child’s psychosis as more internal and controllable by the child). In the current study, the fact that parents generated both internal/biological explanations and external/life event explanations may suggest that parents feel they understand a variety of causal mechanisms resulting in the exhibited behaviors. This is an important finding, as it suggests that there is a much wider range of explanations that can potentially result in a normalized perception of behaviors than was proposed by previous research.
**Intervention and Problem Categories**

The finding that explanations influence people’s assessments about the perceived need for intervention (i.e., the need for change measure in Experiment 3) are in line with previous work showing how explanations affect judgments about adults’ (Kim & LoSavio, 2009) clearly disordered behaviors and whether they should be intervened upon. It is important to point out, however, that although explained behaviors were seen as less in need of treatment than unexplained behaviors, need for change ratings were quite high, such that adults generally thought that all the behaviors needed to be changed, but to a lesser degree for the explained behaviors. These findings correspond to previous findings showing that regardless of whether child behaviors were perceived as problematic or not, treatment was often generally seen as beneficial (Mills & Rubin, 1990; Wakefield et al., 2002; Giummarra & Haslam, 2005). It seems reasonable that when confronted with clearly problematic behaviors, or even behaviors that may indicate a potential problem, that people may see the benefits of seeking treatment. However, the decision to seek help is not always so simple, as there are several practical aspects that come into play (e.g., cost of care, location of care, stigma received as a result of care). These additional aspects may have a strong influence on whether or not treatment is sought out, and perhaps even more so than simply knowing that problematic behaviors are present. A critical question for future research, therefore, is determining adults’ threshold for actively seeking help for a child, and relatedly, how adults actually go about trying to change these kinds of behaviors.

**Clinical Significance**

In examining whether causal explanations influence problem categorization judgments, we were also able to address how the normalization phenomenon indicated in the child developmental literature may come about. Childhood mental illness is a prevalent problem in
many countries, including the U.S. (Giummarra & Haslam, 2005), yet adults are often reluctant to label children as having a mental illness. Parents and other adults are very likely, whether with or without awareness, “explaining away” the potentially problematic nature of children’s behaviors, resulting in the behaviors seeming more normal and less problematic, and less in need of a mental disorder diagnosis. This mental process of “explaining away” may be one of the important factors leading to a lack of intervention on behalf of children during the critical stages in development.

However, although explaining away potentially problematic behaviors may lead to later developmental dysfunction in the kinds of contexts considered here, there may also be some positive effects to this normalization process in other contexts. In particular, work by Bugental and colleagues (Bugental, Ellerson, Lin, Rainey, & Kokotovic, 2010) suggests that prompting parental search for causal explanations of distressing infant behavior can actually lead to a reduction in child abuse. Specifically, Bugental and colleagues investigated the causal explanations provided by parents of infants who were at risk of child abuse. Children with low Apgar scores (<9) and children who were three or more weeks premature were considered at-risk, and these researchers identified “at-risk families” as those containing both at-risk children and parents with harsh parenting styles. When parents in at-risk families were placed in a prevention program that required them to keep generating explanations for the child’s behaviors until they generated at least one external explanation (i.e., factors outside the child’s control), child abuse was decreased as compared to the parents who were not placed in this prevention program. It may be that when specifically asked to come up with explanations outside of the child’s control, parents become better able to understand that perhaps the behaviors are not a result of the child purposely trying to be difficult for the parent. This understanding appears to
result in a reduction in feelings that the behaviors were problematic, and they ultimately became viewed by parents as less troublesome. This latter possibility in particular requires systematic investigation, addressing whether or not it is an increase in perceived understanding of the behaviors that reduces feelings of anger and hostility towards the child.

Additionally, it may be that the younger the child, the more likely adults will be to “explain away” signs of problematic behavior. Developmental research suggests not only that adults understand appropriate behaviors for younger age groups as compared to adolescents (Furnham & Weir, 1996), but also that younger children with behavioral problems are thought to be easier to manage than older children with behavioral problems (Gretarsson & Gelfand, 1988). In this way, it may be that potentially problematic behaviors of infants and young children are more easily thought to be transitory or as a result of context than are the behaviors of older children and adolescents. This contrast in age groups remains to be tested.

As many adults may be ignorant of their own likelihood to “explain away” these kinds of behaviors, it will be critical for them to be made aware of this issue. Whether explaining problematic behaviors leads to a reduction of child abuse or a missed intervention opportunity, it seems that adults should be more aware of their own mental processes when making these kinds of decisions about children. The current work found that both parents and lay adults without children used contextual explanations to help make sense of child behaviors, suggesting that parents, too, may need additional guidance in understanding appropriate strategies for dealing with children’s behaviors. Bugental’s work (Bugental et al., 2010) suggests that prevention programs and perhaps other kinds of training programs could be one approach to helping adults become more informed about their reasoning tendencies.

Whereas the current work suggests that having an explanation that helps make sense of
potentially problematic behaviors can lead to the behaviors seeming less problematic, an important question is whether this effect is time-limited. Specifically, if a behavior is “explained away” the first few times it occurs, will that same explanation be sufficient if the behavior continues on for weeks or months? Imagine that Cassie continues to request a baby bottle at age seven and into age eight. At what point does the generated explanation lose its explanatory power? Kim and colleagues (2012) have argued that an explanation for behaviors will no longer normalize those behaviors when the explanation is no longer seen as proportionate to the behaviors (i.e., such that it no longer seems reasonable that the cause would bring out the effects). In the current work, generated explanations normalized the behaviors, regardless of whether or not the explanations were perceived as proportionate to the behaviors by outside raters. Based on these findings, it may be that perceived proportionality is less critical when reasoning about potentially problematic behaviors than perceived understanding; however, it remains an open question whether proportionality will become more critical as these potentially problematic behaviors unfold over the course of development.

**Experience, Exemplars, and Problem Categorization**

In addition to the “understanding it makes it normal” effect, Meehl (1973) also informally observed that people have a tendency to believe that behaviors are more common and more normal after merely learning about or remembering one other instance of that behavior. This concept is directly related to the classic availability heuristic, where exemplars that are available in memory influence future judgments (Tversky & Kahneman, 1974). For example, simply being able to recall one other child who acted similarly may result in a potentially problematic behavior seeming less problematic. This particular observation by Meehl was supported by some of the secondary findings in Experiment 2 and Experiment 3. Specifically, for the adults who had
encountered a child acting similarly to those in the vignettes, the behaviors were seen as less problematic overall. An important future direction is to look at teachers, childcare workers, and pediatricians, who have presumably seen large quantities of young children and observed a wide variety of children’s behaviors, as these adults might be expected to rely heavily on single-exemplar information as a result of their experience. For example, you can imagine that a teacher might reason, “I remember we had a little girl in class a few years back who did just what Cassie is doing -- insisting on drinking out of a bottle.” Memories of many different exemplars that did or did not show the behaviors in question might presumably be more likely to be stored and available to teachers, childcare workers and pediatricians than to parents. Importantly, this kind of reasoning may differ considerably between parents, who see very few exemplars, and teachers who see many different exemplars and therefore many different behaviors.

In addition, teachers, childcare workers and pediatricians might be better than parents at generating causal explanations for behaviors simply by virtue of having had more varied practice doing so. The range of behaviors exhibited in a classroom and a doctor’s office from year to year can change substantially, and therefore explaining child behaviors may become second nature. At the very least, work by Medway (1979) suggests that teachers may rely on different explanations for problem behaviors than parents and lay adults; teachers in Medway’s study overall tended to provide more external explanations for problem behaviors, whereas the current work found that parents provided more internal explanations and lay adults equal numbers of external and internal explanations.

A broader question may be, what is the relative importance of base-rate information and causal, explanatory information when trying to determine problem status? More specifically, if exemplar-based information is available, will that be enough to make an informed decision about
problem status? Similarly, if a likely explanation for the behavior has been identified, is exemplar-based information less necessary? When both explanations and exemplar-based information are available (either provided or made salient), it may be that both will be used to inform problem category judgments, but the unique contributions of exemplar information in problem categorization remain to be tested more systematically.

**The Problem Categorization Reasoning Process**

Experimental work on how people reason about “problem categories” in real life is relatively sparse as of yet. In considering how people might reason about problem categories, we proposed a set of specific stages that may be necessary in making such decisions. To review, first, people must notice when an exemplar exhibits odd or potentially problematic behaviors that warrant a search for their cause or causes. Second, people will initiate and carry out a search for possible causes, identifying those that help to make the most sense of the behaviors. Third, with a plausible cause isolated, the need for intervention must be determined; if the behavior is well understood and appears normal then no intervention will be warranted, whereas if the behavior is poorly understood or still appears problematic, intervention may be perceived as necessary. If it is determined that intervention is needed, opinions are formed as to the best *mode* of intervention, when information about types of interventions is available. Whereas the current work focused on only part of this process, it is important to step back and consider the problem category reasoning process as a whole. Each of these proposed stages is discussed below.

**Stage 1: Noticing potentially problematic behaviors in need of explanation.** Malle (2004; Malle & Knobe, 1997) proposed that a driving force in behavior explanation is the search for meaning, a point that, as has previously been discussed, may be particularly important when considering problem categories. Consider again the example of Cassie; her behaviors are
somewhat odd but it is unclear as to whether they indicate a problem or not. Malle suggested that there are three conditions that ultimately lead to a search for meaning: being aware of the behavior, feeling that the behavior is not understandable, and feeling that the behavior is relevant (either to the individual or to society as a whole) and therefore warrants a causal search. Similarly, Haslam and colleagues (2007) identified a set of processes involved in determining that a behavior is in fact odd: awareness that the behaviors are rare, feeling that the behaviors are difficult to readily understand, belief that the behaviors are caused by the individual (i.e., internal attributions), and perceiving the behavior as representative of a specific type of person or problem. If these conditions are met, than the causal search begins. For example, the awareness that Cassie’s behaviors are odd (e.g., as a result of being rare, difficult to understand, etc.) may jumpstart a mental search for meaning. In particular, the psychological discomfort resulting from a lack of understanding often motivates people to explain these kinds of unexpected or strange occurrences (Hastie, 1984; Weiner, 1985; Gopnik, 2000; Yopchick & Kim, 2012). Human behavior in general is complex and variable and therefore often surprising, but these kinds of potentially problematic behaviors may be particularly subject to causal search, as their ambiguity and somewhat negative nature makes them stand out and seem especially confusing (Malle, 2004).

Importantly, the behaviors described in the current study resembled actual child behaviors that adults would likely observe in the real world and have to explain on a regular basis. The issue of relevance to the individual or society may be especially notable when assessing problematic behaviors in children. It stands to reason that parents find child behavior relevant, as parents regularly reason about their own children and this may easily extend to caring about, or at least being capable of reasoning about the welfare of children in general.
Whereas the current findings that parents readily generate explanations for potentially problematic child behaviors make sense, what may be more surprising is the fact that adults without children were just as likely to generate and use explanations for these behaviors. Perhaps, as Malle’s theory suggests (Malle, 2004), the welfare of children is judged to be something strongly relevant to society as a whole. We speculate that because of this, lay adults may be generally motivated to explain and understand children’s behaviors, even (or especially) when ambiguous.

In future research, it will also be necessary to examine whether parents and other adults will actively and spontaneously search for causal explanations when presented with these kinds of children’s behaviors in the real world, even when not explicitly asked to do so. In the current work, adults were either provided with explanations or prompted to generate explanations for children’s ambiguous behaviors. Past research showing people’s reliance on causal reasoning in other kinds of problems (e.g., processing of complex categories; generation of social theories) has repeatedly indicated that people spontaneously search for and construct causal connections between events and behaviors that seem to co-occur (Anderson & Sechler, 1986; Einhorn & Hogarth, 1986; Hastie et al., 1990; Kunda et al., 1990). Furthermore, people are especially motivated to explain surprising, unexpected, or strange occurrences (e.g., Hastie, 1984; Weiner, 1985; Yopchick & Kim, 2012). Therefore, it is to be expected that when presented with ambiguous child behaviors, people will likely be motivated to begin the causal search process to explain and understand these kinds of behaviors.

**Stage 2: Identification and evaluation of possible causes.** Basic principles of causal reasoning will come into play when people then attempt to identify the set of potential causes for the behaviors. For example, two particularly strong cues to perceiving causality are co-variation
and temporal order (Einhorn & Hogarth, 1986; Cheng & Novick, 1990). First, whether or not people will infer that a particular occurrence is the cause of a given behavior is strongly indicated by whether the potential cause co-varies with the behavior in such a way that the probability of the behavior occurring without the cause is quite low. Second, for cause to be inferred, not only must the potential cause and behavior co-vary, they must occur in a particular direction; the potential cause must precede the behavior in time. When a variable can be identified as consistently occurring before the behavior, it will most often be viewed as bringing about the behavior. For example, Cassie’s parents bringing home a new baby is only viewed as viable cause for her bottle behavior if it occurred before the behavior began, rather than after.

Additionally, the vast literature specifically addressing how people attempt to explain other people’s behaviors (e.g., Jones & Davis, 1965; Kelley, 1967; Weiner et al., 1972; Malle, 2004), provides important insight into how one isolates the most likely causes of a problem. Kelley’s classic attribution model (1967; 1973; Kelley & Michela, 1980) focuses on what causal attributions are made depending on whether behaviors stem from internal properties within an individual’s control versus external properties outside an individual’s control. A more individualistic approach was suggested by Jones and Davis (1965), addressing specific personality characteristics in attribution and focusing on whether the behaviors are dispositional (i.e., stable in the individual) or situational (i.e., transitory in the environment). Following from both Kelley’s work and that of Jones and Davis, Weiner et al. (1972) specified a more global factor: whether the behaviors are seen as stable over time or unstable and changing. In one of the most recent major additions to the literature on attribution theory, Malle (2004) expanded even further by suggesting that explanations will differ depending on whether events and behaviors are viewed as intentional or unintentional. As it is not immediately clear whether potentially
problematic behaviors like those presented in the current work warrant special attention and whether they should be intervened upon, the explanatory search may be critical in helping people determine whether they believe the behaviors are in fact problematic or not. An important question, therefore, is what explanations lay people settle upon as most compelling.

In his seminal work on causal attribution theory, Kelley (1967; 1973; Kelley & Michela, 1980) proposed three key factors used to help explain behavior: distinctiveness, consensus, and consistency. Distinctiveness refers to whether the behavior is unique for the individual or whether the individual behaves this way regularly. Consensus refers to whether or not the individual performing the behavior in question is the only person acting that way, or if others are behaving in a similar manner. Lastly, consistency refers to whether the individual performing the behavior in question continues to act in that manner across time and situations. Observing these factors helps people determine whether a person’s behaviors were brought about by internal factors (i.e., within the control of the individual) or external factors (i.e., out of the individual’s control). As indicated in past work, external factors are more likely to normalize behaviors than internal factors (Kim & LoSavio, 2009), although the current work indicates that this distinction is subsumed under the broader influence of perceived understanding.

Importantly, isolating a possible cause may not always result in categorizing a person’s behaviors or symptoms as problematic or not. In some cases, when multiple causes are available and are possible, the reasoned may have difficulty in categorizing the symptoms or behaviors as a problem or not. Consider the medical diagnosis of pneumonia (Ahn, Kim, Lassaline, & Dennis, 2000); there are multiple causes or types of pneumonia (e.g., bacteria, viral) and each lead to the same core symptom of lung inflammation. In cases such as pneumonia, knowing the symptom may be more informative than trying to isolate the most likely cause, as the symptom in this case
is actually more informative in making a diagnosis of pneumonia. While isolating the most likely cause for a behavior is an important step, we recognize that problem categorization will not always directly map onto whether a cause (or which cause) has been identified; rather, a collective assessment of whether the behaviors and causes together represent unwanted and undesirable features is necessary. In most cases, however, knowing the cause will still likely be the most useful in determining how best to treat a problem, at point discussed at length in the following section.

**Stage 3: Determining the need for and mode of intervention.** In Kelley’s (1967; 1973; Kelley & Michela, 1980) model, making this key distinction, internal versus external, may affect a person’s overall understanding of the behavior in question, and may ultimately guide that person’s judgments about intervention for the behaviors. Consider Thagard’s model of explanatory coherence (1989; 1992), which posits that understanding is increased when a simple, parsimonious explanation is available. In the current context, if a reasoner can explain the behavior in question with a simple, succinct explanation regarding the origin of the behavior (i.e., internal versus external), this explanation should resolve some ambiguity of the nature or origin of the behavior. As has been previously argued (Yopchick & Kim, 2009), this should then lead to the formation of a clearer intervention strategy. For example, people may reason that if these behaviors are controlled by internal factors, behavior modification may be more successful than if the behaviors are the result of external forces. Interestingly, in the current work, parents did provide more internal explanations for the children’s behaviors than did lay adults (e.g., “Cassie acted that way because Cassie wanted attention from her parents”), but as discussed, these kinds of explanations did not differentially affect understanding of the problem behaviors. The current studies addressed questions about how people determine the need for more global
intervention, but an interesting question for future research will be whether individual intervention strategies differ depending on the content of the explanation generated.

The current work described children’s highly observable, potentially problematic behaviors but without addressing the perceived intentionality of the behaviors. Malle (1999) argued that any given behavior (e.g., breaking a flower vase) can be perceived as intentional in nature (e.g., a child is angry and throws the vase on the ground) or unintentional in nature (e.g., a child is clumsy and bumps into the case, knocking it to the ground). As perceived intentionality has been found to strongly influence how those behaviors are then further explained (Malle, 1999; Malle, Knobe, O’Laughlin, Pearce, & Nelson, 2000), it will be important, in future work, to determine whether intentionality moderates the influence of explanation for problem category judgments. The current work did not attempt to manipulate perceived intentionality in the behavioral vignettes, and as a result, it cannot be determined whether generated explanations (in Experiment 3) differed for intentional versus unintentional behaviors. Future work will therefore be needed to address the specific issue of perceived intentionality.

For example, if a child intentionally performs a potentially problematic behavior, will the behavior still seem less problematic when an additional explanation that increases understanding can be generated? Will the behavior seem more or less in need of change? It may be that, even if the behaviors are not intentional, children are not held responsible for their problematic behaviors as adults would be, and instead the behaviors are seen as a result of the normal course of development (Rubin & Mills, 1992). Alternatively, behaviors that are controllable by the individual may be seen as more problematic and in need of intervention (e.g., consider the juvenile justice system, where intentional behaviors might be seen as more problematic and punishable than unintentional ones).
Lastly, previous work has shown that if behaviors are definitely categorized as indicating a problem (e.g., labeled as having a mental disorder), people then adopt the goal of eliminating the problem completely by changing the problem behaviors or features (Ahn, Proctor, & Flanagan, 2009; Yopchick & Kim, 2009). We have previously referred to this goal as *category membership removal* (Yopchick & Kim, 2009). These studies presented adults with artificial mental disorders and described the symptoms as being causally connected (e.g., \( X \rightarrow Y \rightarrow Z \)). The study found that people’s inferences about how best to intervene upon the disorder were heavily influenced by the root-cause symptom of the disorder (e.g., \( X \)). Specifically, treatment acting on the root cause, which would presumably eliminate all symptoms downstream, was perceived as being the most effective intervention, supporting the notion that the goal in intervening upon a problem is to ultimately eliminate it entirely. Even when people were only asked to eliminate the terminal effect symptom (e.g., \( Z \)), they chose instead to intervene on the root cause (e.g., \( X \)). These findings suggest that explanations can not only help inform the nature of the category, but additionally guide inferences about how to optimally intervene upon problem category members.

In sum, the current work has only addressed parts of the process involved in reasoning about problem categories, and some key questions remain to be mapped out. Learning which explanations hold the most weight when reasoning about ambiguous cases, which explanations will be discarded as implausible or irrelevant, and which explanations will be more seriously contemplated and trigger a search for further evidence will prove critical for understanding the entire process. It may be that only certain kinds of provided explanations will seem to reasonably bring about potentially problematic behaviors, but when trying to comprehend a behavior in one’s private thoughts (Malle, 2004), candidate explanations may fall under less scrutiny.
While the current work has focused specifically on psychological problem categories, it is likely that this proposed problem categorization process similarly applies across domains. Consider the biological problem category of cancer, or the artifact problem category of a broken down car; in both of these cases it is likely that the same problem categorization process (i.e., awareness of the problem, search and evaluation of plausible causes, and intervention decisions and strategies) will play out. It may be however, that in the case of psychological problems, human behaviors are more subjective and the issue of problem identification proves more difficult than for biological and artifact kinds. This however, remains an open question. As problem categories are ubiquitous in everyday life, it is important that future research continue to address all aspects of the problem categorization reasoning process.

Rationality of the Normalization of Problem Behaviors

A question that has yet to be addressed is whether or not it is rational to see behaviors as less problematic when they are well understood. Meehl (1973) proposed that normalizing behaviors as a result of an increased feeling of understanding is actually a reasoning fallacy, and can lead to inappropriate conclusions. However, this reasoning strategy can also be thought of as a heuristic, leading to fast and often accurate decision making, although never without some minimal costs (Tversky & Kahneman, 1974). In the case of children’s problematic behaviors, it has previously been discussed that missing problematic behaviors at critical stages in childhood can lead to later dysfunction in development (Garland et al., 2001). This suggests one possible reason why this type of reasoning may not be particularly rational when considering children’s behaviors. However, it is also suboptimal to assume to that every child behavior that differs from adult behavior is suggestive of a psychological problem. Children behave in many ways that, if the exact same behavior was seen in adults, could suggest a psychological problem (e.g., having
imaginary friends). It is not fruitful to assume that every non-adult behavior is something to be concerned about.

A particularly important issue is specifically pertinent to the need for change measure implemented in Experiment 3. As discussed in Kim and LoSavio (2009), feeling that a behavior seems more normal as a result of understanding the behavior may at times be rational (e.g., it may actually be more statistically common for a child to want to return to using a baby bottle when a new baby is brought into the home), but concluding that a child no longer needs intervention because the same behavior is well understood may be more detrimental. The feeling that one understands why a child is acting in a certain way should not automatically lead to a conclusion that there is no reason to change that same behavior. For example, understanding that Andy is treating all toys as guns and pretends to shoot everyone he sees may be understandable in light of the information that Andy’s father is a police officer; however, it may still be beneficial to intervene and both limit the amount of toy guns Andy can play with as well as explain to Andy that guns are dangerous. Ultimately, feeling that the behavior is understandable is not synonymous with the problematic behaviors no longer being seen as a problem.

Children represent an interesting case, as children are rapidly changing and constantly developing (Miller, 1995) and the process of trying to understand each fleeting behavior can seem unending. As children do develop quickly, it may be more beneficial to be overly cautious of problematic behaviors, knowing that if the behaviors do go away with time they were perhaps only a short developmental phase, but if the same behaviors continue over time the intervention process has already begun and steps to alleviate the problem are in motion.

**Broader Future Directions**
The current work found that both provided and self-generated explanations lead to potentially problematic behaviors seeming less problematic on a variety of dimensions. On the other hand, work by De Los Reyes and Marsh (2011) suggests that certain kinds of contextual information (e.g., an adolescent doesn’t like his classmates because they won’t let him cheat from their tests; an adolescent’s friend’s parents tend not to like him) may actually further indicate psychological dysfunction, rather than normalizing problematic behaviors. Clinicians were more inclined to report adolescent behaviors as problematic when the context instantiated previously encountered examples of abnormal behavior. Specifically, when the contextual information provided for conduct related behaviors was considered a risk factor for conduct disorder (see Burke, Loeber, & Birmaher, 2002), rather than irrelevant or inconsistent information, the conduct related behaviors were seen as more strongly indicative of a psychological problem. Importantly, these findings suggest that there may be situations in which additional information leads to behaviors seeming more problematic. Understanding more precisely what differences in contextual information result in behaviors seeming more or less problematic is a critical goal for future studies.

While the current work portrayed both parents and lay adults as unified experienced populations, it will also be important to determine any individual differences in the problem categorization process, as preferences for certain kinds of explanations or exemplar information as well as differences in how people approach the search for explanations may result in behaviors more often being passed over for intervention.

As the search for causal explanations may require some amount of effort, one might predict that individual differences in need for cognition (Cacioppo & Petty, 1982) could influence whether an individual searches for causal explanations for ambiguously problematic
behaviors. For those who have a high need for cognition (i.e., enjoyment in thinking and thought
provoking situations), it may be that the search for causal explanations for these kinds of
ambiguous behaviors will occur quite readily. However, those lower in need for cognition may
not find it necessary to search for meaning in these kinds of ambiguous behaviors, having little
motivation to put in the cognitive effort necessary to understand the behaviors further, especially
in cases where they do not personally know the person performing the ambiguous behaviors. In a
similar vein, people who tend to be more highly superstitious (Lindeman & Aarnio, 2007), may
also be more willing to accept ambiguous behaviors at face value and find little need to explain
them further. For example, Lindeman and Aarnio (2007) found that those individuals who are
highly superstitious tend to accept more violations of physical, biological, and importantly for
the current work, psychological core knowledge; suggesting that perhaps these ambiguous
behaviors may not seem as “odd” to superstitious individuals and therefore will not elicit further
explanation.

With regard to judgments about intervention, Dweck’s theory of motivation and
personality (e.g., Dweck & Leggett, 1988) suggests that the level at which an individual
generally believes that behaviors and traits are within a person’s control could affect whether or
not treatment is thought to be necessary and even effective. Specifically, differences in the
degree to which people believe that they can change their behaviors as well as being motivated to
do so, may influence problem category judgments. For those individuals who see person
attributes as fixed and controllable by the individual, problem behaviors may be seen as
controlled by the individual and therefore should be eliminated by will and may not warrant
treatment. Alternatively, for those individuals who instead tend to view person attributes as
malleable and changing, problem behaviors may be seen as less the responsibility of the
individual to eliminate and treatment may be viewed as a necessary step. These issues remain open questions that require empirical investigation; understanding how individual differences play into the problem categorization process will be critical when addressing behavior change and intervention.

An additional question for future research is how these findings might differ cross-culturally. The so-called fundamental attribution error (Ross, 1977), suggests that people tend to attribute more internal properties to the behaviors of others and especially to those in one’s out-group and more situational properties to their own behaviors and to those in their in-group. When considering problem behaviors, previous work by Morris and Peng (1994) contrasting individualist and collectivist approaches to causal attribution examined American and Chinese participants’ attributions for crimes. They found that only Americans showed the fundamental attribution error in their reasoning. In contrast, the Chinese tended to provide more situational explanations overall. Experiments 1 and 2 of the current work provided incongruent or implausible explanations that were out of the child’s control, and therefore somewhat situational in nature. Whereas these were seen as incongruent and implausible by American participants (as indicated by the pilot studies), this kind of situational information may seem more plausible in people strongly influenced by more collectivist cultures, such as in China. Indeed, Morris and Peng (1994) showed that Chinese participants assigned some causal power to even very tangentially related potential causes, whereas American participants did not. Thus, it is possible that the kinds of explanations that result in a greater understanding of the behaviors (and subsequently, the normalizing effect) may differ significantly across different cultures. A systematic investigation examining the role of culture in problem categorization will be necessary to isolate the unique contributions of culture.
Overall, given the current findings, it is clear that both explanatory content and prior exemplar experience has a powerful influence on adults’ perceptions of children’s problematic behaviors. Behaviors that may ultimately result in dysfunction in adulthood are being overlooked as adults may be explaining them away or dismissing them as a result of feeling that other children tend to act in similar ways. Awareness of this normalization process will be important for adults, parents, and caretakers to ensure that children are not developing detrimental problematic behaviors throughout childhood.
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Appendix A: Behavioral Vignettes for Experiments 1-3

Case #1: Andy

Andy is a 5-year-old boy who pretends that everything is a gun. He often puts his fingers into “shoot” position as he walks around his house. When people that Andy has never met before walk into his house, he holds his hands up and “shoots,” yelling, “POW! POW!” When Andy’s parents bring him home a new toy, the first thing he does with it is use it as a gun. Andy often tells his parents that the only toys he wants are guns.

**Congruent Explanation:**

*After speaking with Andy’s parents, you discover that Andy’s father is a police officer*

**Incongruent Explanation:**

*After speaking with Andy’s parents, you discover that Andy’s father is a fire fighter*

Case #2: Casey

Casey, age 3, used to love his stuffed animal lion, but now becomes terrified at the very sight of this same stuffed lion. Casey continuously hides the lion under his bed and tells his parents that the lion is “never coming back.” Although Casey used to sleep every night with his stuffed lion, he now chooses to sleep with just the blanket and asks his parents to leave all the lights on in his bedroom at night, saying, “in case lion comes back.”

**Congruent Explanation:**

*Experiment 1: After speaking with Casey’s parents, you discover that Casey recently took a trip to the zoo and saw a lion roar and lunge towards the gate*
Experiment 2: After speaking with Casey’s parents, you find out that that Casey recently took a trip to the zoo and found out that the lion had been transferred to another zoo.

Incongruent Explanation:

Experiment 1: After speaking with Casey’s parents, you discover that Casey recently took a trip to the zoo and saw an alligator thrashing in the water.

Experiment 2: After speaking with Casey’s parents, you find out that Casey recently took a trip to the zoo and found out that the polar bear had been transferred to another zoo.

Case #3: Jill

Jill, age 4, has an imaginary friend with whom she spends most of her time. Jill prefers playing with her imaginary friend to playing with her real friends. When Jill is reprimanded by her parents for bad behavior, she often claims that her imaginary friend did it, not her. Jill insists on having an extra bed in her bedroom for her imaginary friend, having an extra car seat in her parents’ car, and buying duplicates of everything – lunch boxes, dresses, dolls, and so on – to share with her imaginary friend.

Congruent Explanation:

After speaking with Jill’s parents, you discover that they recently told her that she has a biological sister living in England.

Incongruent Explanation:

After speaking with Jill’s parents, you discover that they recently told her that she has a biological father living in England.
Case #4: Cassie

Cassie, age 6, recently started demanding to use a baby bottle again. Although she had not used a bottle for years, Cassie now insists on drinking all of her beverages, both at home and at school, out of a bottle. When her parents tried to explain to her that “big girls don’t need bottles,” she began severely crying until she was finally given a bottle. Cassie can no longer go to bed at night without a bottle in her mouth, and the first words out of her mouth when she wakes up are “bottle, please.”

*Congruent Explanation:*

After speaking with her parents, you learn that Cassie’s parents recently brought her baby sister home from the hospital.

*Incongruent Explanation:*

After speaking with her parents, you learn that Cassie’s parents recently brought her grandmother home from the hospital.

Case #5: Max

Max is a 4-year-old boy who has become fixated on the verbal utterances of others. If he hears someone speaking, he immediately imitates them and will repeatedly say whatever it is he heard, regardless of whether his parents respond. Often, Max repeats one short phrase over and over again after he hears his parents say it, such as “let’s go, let’s go, let’s go.” Max never stops talking, but rarely ever speaks his own material; rather he is always mimicking others.

*Congruent Explanation:*
After speaking with parents, you learn that Max’s preschool recently adopted a parrot as a class pet

Incongruent Explanation:

After speaking with his parents, you learn that Max’s preschool recently adopted a guinea pig as a class pet

Case #6: Jack

Jack, age 4, has an obsession with shoes. Jack always wants to have shoes on, and at preschool during naptime he takes the other boys’ and girls’ shoes off while they are asleep and puts them on, and even tries to get his teacher’s shoes too. Jack often wears his parents’ shoes around the house and even tries to put shoes on the family dog. Recently, Jack has begun insisting on wearing his shoes to bed and was caught once wearing shoes into the bathtub.

Congruent Explanation:

After speaking with Jack’s parents, you realize that Jack just learned how to tie his shoes by himself

Incongruent Explanation:

After speaking with Jack’s parents, you realize that Jack just learned how to brush his teeth by himself

Case #7: Sarah

Sarah, age 3, will only wear green clothing. She started by wearing only clothes that had some green in them, and then escalated to wearing only clothes that are green all over. Sarah gets very...
upset when she cannot wear green or when all her green clothes are in the laundry. She screams and cries when this occurs. Sarah often seems genuinely afraid of clothing that is not green.

*Congruent Explanation:*

*After speaking with her parents, you learn that after a house fire Sarah was wrapped in a green safety blanket*

*Incongruent Explanation:*

*After speaking with her parents, you learn that after an earthquake Sarah was seated on a bench near her house*

---

Case #8: Maggie

Maggie is a 5 year-old girl who takes all of her favorite belongings everywhere she goes, her favorite doll, favorite stuffed bear, and her favorite crayons. Maggie used to bring a few belongings with her whenever they left the house, but eventually she started bringing so many things that her parents had to get her a separate bag for all of her favorite things. Over time, the bag has gotten heavier and heavier, but Maggie still insists on carrying it everywhere.

*Congruent Explanation:*

*After speaking with her parents, you discover that Maggie’s baby brother often takes some of her toys and chews on them*

*Incongruent Explanation:*

*After speaking with her parents, you discover that Maggie’s baby brother often takes some of her dinner and chews on it*
Case #9: Dillon

Dillon, age 3, is constantly exhibiting bad behavior in front of his parents, waiting until they are watching to complete the act. Dillon will often take his plate of food and pretend to dump it upside down, and when his parents look over and say “no,” he smiles and immediately dumps the plate upside down. Dillon follows this same pattern by knocking things off tables and chairs, flushing articles of clothing down the toilet, and continually putting non-food items in the refrigerator.

Congruent Explanation:

Experiment 1: After speaking with his parents, you discover that Dillon greatly enjoys basking in the undivided attention of his parents

Experiment 2: After speaking with his parents, you discover that Dillon greatly enjoys his parents' undivided attention

Incongruent Explanation:

Experiment 1: After speaking with his parents, you discover that Dillon greatly enjoys basking in the affectionate hugs and kisses of his parents

Experiment 2: After speaking with his parents, you discover that Dillon greatly enjoys his parents' affection and praise.

Case #10: Tommy

Tommy is a 6-year-old boy who refuses to try any type of new food, even if it’s a variation on a food he likes. When Tommy’s parents try to introduce a new food to him he screams and cries,
kicks, punches, flops on the floor, and spits whatever food is in his mouth onto his plate. A few days ago, Tommy threw his plate at his sister because his parents had switched chicken nuggets brands.

*Congruent Explanation:*

*After speaking to Tommy's parents, you find out that Tommy was recently tested for allergies after having an allergic reaction to squash*

*Incongruent Explanation:*

*After speaking to Tommy's parents, you find out that Tommy was recently tested for vision and hearing as part of a regular school assessment*

---

Case #11: Lily

Lily, a 5-year-old little girl, is extremely affectionate. When Lily comes to kiss her little brother goodnight, she insists on kissing him on the lips and continually tries to kiss other adults on the mouth. Her parents have tried talking to her about appropriate affection, but Lily continues to kiss everyone she sees. Recently, Lily’s teacher called to discuss Lily hugging and kissing other children incessantly.

*Congruent Explanation:*

*After speaking to Lily's parents, you find out that Lily recently walked in on her parents kissing passionately*

*Incongruent Explanation:*
After speaking to Lily's parents, you find out that Lily recently walked in on her parents having a serious discussion.

Case #12: Chase

Chase, a 6-year-old boy, has stopped communicating verbally all together. While his vocabulary used to be superb, he has recently stopped talking and will only communicate by pointing and grunting. Chase appears extremely agitated when he cannot convey what he wants or needs but refuses to talk to his parents. Chase’s parents spoke to his teacher, and found that he is also refusing to participate in school even after being reprimanded for lack of participation.

Congruent Explanation:

After speaking to Chase's parents, you find out that they recently took him to see a play with a deaf, mute actor.

Incongruent Explanation:

After speaking to Chase's parents, you find out that they recently took him to see a play with an actor in a wheel chair.

\(^1\)Denotes vignettes only presented in Experiment 1

\(^2\)Denotes vignettes only presented in Experiment 2
Table 1: Sample Questions for Experiment 1

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Example</th>
<th>Rating Scale Endpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological</td>
<td>In your opinion, how normal or abnormal are [Cassie]’s behaviors?</td>
<td>1=very abnormal, 9=very normal</td>
</tr>
<tr>
<td>Normality</td>
<td>[Cassie]’s behaviors?</td>
<td></td>
</tr>
<tr>
<td>Statistical</td>
<td>How rare or common are [Cassie]’s behaviors?</td>
<td>1=very rare, 9=very common</td>
</tr>
<tr>
<td>Commonness</td>
<td>How culturally acceptable (in the U.S.) are [Cassie]’s behaviors?</td>
<td>1=not at all acceptable, 9=completely acceptable</td>
</tr>
<tr>
<td>Cultural Acceptability</td>
<td>How much contentment versus distress do you think these behaviors cause [Cassie] in her daily life?</td>
<td>1=causes a lot of contentment, 9=causes a lot of distress</td>
</tr>
</tbody>
</table>
Table 2: Main Results from Experiment 1 - Mean Ratings

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Congruent</th>
<th>Incongruent</th>
<th>No Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality</td>
<td>6.32 (.11)</td>
<td>5.19 (.11)</td>
<td>4.85 (.10)</td>
</tr>
<tr>
<td>Contentment</td>
<td>4.63 (.11)</td>
<td>3.46 (.14)</td>
<td>3.83 (.11)</td>
</tr>
<tr>
<td>Statistical</td>
<td>6.04 (.10)</td>
<td>5.25 (.10)</td>
<td>5.27 (.10)</td>
</tr>
</tbody>
</table>

Note: All ratings were made on a 1-9 scale. Higher ratings indicate judgments of higher normality, contentment, and statistically commonness. Standard errors are shown in parentheses. The fourth measure from Experiment 1, cultural acceptability, is presented in Figure 1.
<table>
<thead>
<tr>
<th>Experiment</th>
<th>Parents</th>
<th>Age</th>
<th>Education Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Parents</td>
<td>Mean: 31.22 (8.84)</td>
<td>Some High School: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Range: 19-79</td>
<td>High School Diploma/GED: 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Some College: 23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>College Degree: 43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post-College Degree: 17</td>
</tr>
<tr>
<td></td>
<td>Lay Adults</td>
<td>Mean: 31.11 (5.93)</td>
<td>Some High School: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Range: 19-50</td>
<td>High School Diploma/GED: 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Some College: 19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>College Degree: 42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post-College Degree: 22</td>
</tr>
<tr>
<td>3</td>
<td>Parents</td>
<td>Mean: 31.41 (6.43)</td>
<td>Some High School: 0</td>
</tr>
<tr>
<td></td>
<td>(Explanation Condition)</td>
<td>Range: 20-49</td>
<td>High School Diploma/GED: 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Some College: 17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>College Degree: 31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post-College Degree: 17</td>
</tr>
<tr>
<td></td>
<td>Parents</td>
<td>Mean: 30.50 (7.63)</td>
<td>Some High School: 2</td>
</tr>
<tr>
<td></td>
<td>(Control Condition)</td>
<td>Range: 18-55</td>
<td>High School Diploma/GED: 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Some College: 16</td>
</tr>
</tbody>
</table>
College Degree: 36
Post-College Degree: 9

Lay Adults  Mean: 33.78 (9.78)  Some High School: 2
(Explanation  Range: 19-71  High School Diploma/GED: 5
Condition)

Some College: 12
College Degree: 31
Post-College Degree: 8

Lay Adults  Mean: 33.59 (8.36)  Some High School: 0
(Control  Range: 21-48  High School Diploma/GED: 5
Condition)

Some College: 16
College Degree: 31
Post-College Degree: 9

*Note: Standard deviations shown in parentheses.*
Table 4: Sample Questions for Experiments 2 and 3

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Example</th>
<th>Rating Scale Endpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Health</td>
<td>What is your first impression of [Cassie]’s current psychological health?</td>
<td>1=very poor, 9=very good</td>
</tr>
<tr>
<td>Future Behavioral Problems</td>
<td>Without intervention, what is the likelihood that [Cassie] will have behavioral problems in the future?</td>
<td>1=highly likely, 9=highly unlikely</td>
</tr>
<tr>
<td>Statistical Commonness</td>
<td>How rare or common are [Cassie]’s behaviors?</td>
<td>1=very rare, 9=very common</td>
</tr>
<tr>
<td>Cultural Acceptability</td>
<td>How culturally acceptable (in the U.S.) are [Cassie]’s behaviors?</td>
<td>1=not at all acceptable, 9=completely acceptable</td>
</tr>
<tr>
<td>Social Difficulties</td>
<td>To what degree would [Cassie] have current social difficulties because of these behaviors?</td>
<td>1=extreme social difficulties, 9=absolutely no social difficulties</td>
</tr>
<tr>
<td>Degree of Experience</td>
<td>Parents: To what degree has your own child (or any child whom you were responsible for caring) behaved exactly like [Cassie]?</td>
<td>1=I have never cared for/interacted with a child, 9=I have cared for/interacted with a child</td>
</tr>
</tbody>
</table>
Lay Adults: To what degree has any child with whom you have interacted behaved exactly like [Cassie]?

Need for Change* To what degree do [Cassie]’s behaviors need to be changed? 1=behaviors need to be changed completed, 9=behaviors do not need to be changed

Ease of Generation* How easy or difficult was it to provide an explanation for [Cassie]’s behaviors? 1=very difficult, 9=very easy

Understanding* Given the explanation you provided, how easy or difficult is it for you to understand [Cassie]’s current behaviors? 1=very difficult to understand, 9=very easy to understand

Note: The Need for Change, Ease of Generation, and Understanding measures were only presented in Experiment 3.
Table 5: Main Results from Experiment 2 - Mean Ratings

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Congruent</th>
<th>Incongruent</th>
<th>No Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Health</td>
<td>5.20 (.10)</td>
<td>4.76 (.09)</td>
<td>4.60 (.10)</td>
</tr>
<tr>
<td>Future Behavioral Problems</td>
<td>5.40 (.12)</td>
<td>5.05 (.10)</td>
<td>4.83 (.11)</td>
</tr>
<tr>
<td>Statistical Commonness</td>
<td>5.58 (.11)</td>
<td>5.22 (.11)</td>
<td>5.18 (.10)</td>
</tr>
<tr>
<td>Cultural Acceptability</td>
<td>5.00 (.11)</td>
<td>4.67 (.11)</td>
<td>4.55 (.11)</td>
</tr>
<tr>
<td>Social Difficulties</td>
<td>4.85 (.09)</td>
<td>4.62 (.09)</td>
<td>4.59 (.09)</td>
</tr>
</tbody>
</table>

*Note: All ratings were made on a 1-9 scale. Higher ratings indicate judgments of higher psychological health, statistically commonness, and cultural acceptability as well as judgments of fewer future behavioral problems and fewer social difficulties. Standard errors are shown in parentheses.*
<table>
<thead>
<tr>
<th>Question Type</th>
<th>Example</th>
<th>Rating Scale Endpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plausibility</td>
<td>How plausible is this explanation given these behaviors?</td>
<td>1=completely implausible, 9=completely plausible</td>
</tr>
<tr>
<td>Proportionality</td>
<td>Lack of Extremity How extreme is this behavior?</td>
<td>1=very extreme, 9=very mild</td>
</tr>
<tr>
<td></td>
<td>How extreme is this explanation?</td>
<td>1=very extreme, 9=very mild</td>
</tr>
<tr>
<td>Positivity</td>
<td>How negative is this behavior?</td>
<td>1=very negative, 9=very positive</td>
</tr>
<tr>
<td></td>
<td>How negative is this explanation?</td>
<td>1=very negative, 9=very positive</td>
</tr>
</tbody>
</table>
Table 7: Main Results from Experiment 3 - Mean Ratings

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Explanation</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Health</td>
<td>5.20 (.10)</td>
<td>4.67 (.10)</td>
</tr>
<tr>
<td>Future Behavioral Problems</td>
<td>5.01 (.11)</td>
<td>4.61 (.11)</td>
</tr>
<tr>
<td>Statistical Commonness</td>
<td>5.70 (.09)</td>
<td>5.24 (.10)</td>
</tr>
<tr>
<td>Cultural Acceptability</td>
<td>4.75 (.12)</td>
<td>4.36 (.11)</td>
</tr>
<tr>
<td>Social Difficulties</td>
<td>4.83 (.10)</td>
<td>4.51 (.10)</td>
</tr>
<tr>
<td>Need for Change</td>
<td>4.07 (.11)</td>
<td>3.70 (.11)</td>
</tr>
</tbody>
</table>

*Note:* All ratings were made on a 1-9 scale. Higher ratings indicate judgments of higher psychological health, statistically commonness, and cultural acceptability as well as judgments of fewer future behavioral problems, fewer social difficulties, and being less in need of change. Standard errors are shown in parentheses.
Table 8: Stepwise Regression Results from Experiment 3

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Level of Understanding</th>
<th>Plausibility</th>
<th>Proportionality: Extremity</th>
<th>Proportionality: Negativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Health</td>
<td>.470 (6.00)*</td>
<td>.020 (.256)</td>
<td>-.019 (-.256)</td>
<td>-.044 (-.559)</td>
</tr>
<tr>
<td>Future Behavioral Problems</td>
<td>.390 (4.77)*</td>
<td>.015 (.179)</td>
<td>.061 (.742)</td>
<td>.011 (.131)</td>
</tr>
<tr>
<td>Statistical Commonness</td>
<td>.435 (5.45)*</td>
<td>-.102 (-1.27)</td>
<td>.033 (.412)</td>
<td>.131 (1.65)</td>
</tr>
<tr>
<td>Cultural Acceptability</td>
<td>.311 (3.69)*</td>
<td>-.120 (-1.43)</td>
<td>-.036 (-.418)</td>
<td>.047 (.552)</td>
</tr>
<tr>
<td>Social Difficulties</td>
<td>.362 (4.37)*</td>
<td>-.036 (-.435)</td>
<td>.058 (.695)</td>
<td>.034 (.409)</td>
</tr>
<tr>
<td>Need for Change</td>
<td>.281 (3.30)*</td>
<td>-.149 (-1.77)</td>
<td>.108 (1.26)</td>
<td>.146 (1.72)</td>
</tr>
</tbody>
</table>

Note: t values shown in parentheses, * p ≤ .001.
Figure Captions

*Figure 1.* Results from the Cultural Acceptability Judgments in Experiment 1. Higher ratings indicate greater cultural acceptability.
Figure 1: Results from the Cultural Acceptability Judgments in Experiment 1