Does Explanation Precede Prediction in False Belief Understanding?

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Running head: Explanation and Prediction
Abstract

The majority of studies on children’s developing theory of mind have relied on predictive tasks. Because children’s folk psychological understanding of others may develop differently in different domains, we believe that it is important to compare children’s predictive and explanatory abilities. While a few researchers have taken on this question, methodological problems have hampered direct comparisons of young children’s performance on prediction and explanation tasks involving a false belief. Recent studies mixed forced-choice with open-ended tasks, and there has been asymmetry of task demands due to purported bias towards reality in the prediction - but not in the explanation condition. We resolved these asymmetry problems by making both the prediction and explanation task forced-choice, and by giving children the opportunity to refer to reality in the explanation tasks. We tested 55 children aged 3 and 4 in two prediction and two explanation tasks. We found that children generally did not find explanation easier than prediction. Overall performance improved with age.
Acknowledgments

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Does Explanation Precede Prediction in False Belief Understanding?

Studies of young children’s theory of mind have traditionally focused on false belief prediction tasks, though recent research has placed emphasis on children’s ability to explain behavior associated with a false belief. The classic moved object task (Wimmer and Perner 1983), the unexpected contents task (Perner et al. 1987), and the false contents task (Gopnick and Astington 1988) all ask children to predict the behavior of another person who does not have as much information about the state of affairs as the child herself has. Most of the available evidence suggests that children first pass these varieties of the false belief task around the age of 4 years (e.g. Flavell, 1988; Gopnik & Meltzoff, 1997; Perner 1991). Various theoretical considerations have led a number of researchers to conduct studies designed to investigate whether children have an understanding of false belief before successful performance on the prediction task (Robinson & Mitchell, 1995; Moses & Flavell, 1990, Bartsch and Wellman, 1989). These authors argue that the prediction task does not provide a reliable decision procedure for determining whether a child has some understanding of folk psychology, and that it is feasible that children who are unable to pass a prediction task do have some understanding of folk psychology. They further argue that the ability to attribute beliefs in order to explain behavior may developmentally precede the ability to attribute beliefs in order to predict behavior.

Several reasons can be given in support of the above hypothesis. For one, a prediction task asks for more than just belief attribution; it asks the child to utilize the belief attribution in order to predict what others may do. It may be that to predict behavior is a more complex task than to merely recognize that one can have false beliefs. For example, if young children have a general difficulty with counterfactuals, as Riggs et al. argue (1998), it is possible that they have false belief understanding yet are unable to make predictions based on this knowledge. If successful false belief predictions rest on a
familiarity with counterfactuals, then a child who has a rich belief-desire folk psychology may be unable to make predictions because of the conditional nature of the task.

Another reason given for the expectation that explanation precedes prediction is that children need not avoid referring to reality when explaining a behavior that has already happened (Mitchell, 1994; Robinson, 1994; Robinson & Mitchell, 1995). In the traditional unexpected transfer tasks children have the opportunity to predict that the protagonist will look for the object where it actually is (Wimmer & Perner, 1983). In an explanation task, the behavior to be explained has already occurred and is the actual state of affairs, thus it has been suggested any bias children might have toward reality would not effect performance on explanation tasks (Robinson & Mitchell, 1995). If this were true, then explanation would be intrinsically easier than prediction, and not simply an artifact of the experiment. In addition, Moses and Flavell (1990) have argued that explaining behavior is simpler than prediction because the false belief can be read off behavior. They claim that when children see an actor behaving contrary to the satisfaction of his desire, this is a clue to his false belief.

According to one version of the theory-theory, children are seen as scientists who start out with a rudimentary theory of human behavior, and test the theory through observing behavior (Gopnik & Wellman, 1992). The child revises the theory when she is confronted with anomalous findings. Bartsch (1998) argues that it follows from this position that children should be able to explain behavior resulting from a false belief before they can predict such behavior. If a child starts off with a desire-centered theory of behavior, as Bartsch and Wellman (1995) suggest, the child will predict that people will act so as to best satisfy their desires. This strategy may work for a while, but once the child observes someone whose behavior does not lead to desire satisfaction, the child is faced with the need to explain the behavior. After the child develops an explanation for this behavior, it becomes clear that the desire-centered heuristic is not a sufficient theory, and the theory must be revised to take the person’s epistemic state into account.
Thus, in order to modify the naïve theory, the child needs to explain the behavior, and only after the correct explanation is discovered will the child be able to incorporate this new knowledge into a theory that will allow her to better predict behavior.

There have been a number of studies that directly compare children’s ability to predict and explain false belief behavior, and the results have been ambiguous. In one study, Bartsch and Wellman (1989) compared 3-year-olds' success on a false belief and explanation task. Subjects were shown a puppet show with a character named Bill who has a cut. Before the show, children were shown the interior of two boxes: a marked Band-Aid box that was empty, and an unmarked box filled with Band-Aids. For the explanation condition, Bill moved over to the marked box, and children were asked: “Why do you think he’s looking there?” followed by the prompt: “What does Bill think?” For the prediction condition, children were asked which of two places Bill would look for a Band-Aid. Bartsch and Wellman found that children predicted correctly only 31% of the time, but gave a false belief explanation 66% of the time.

While considering this result, it is important to note that in the prediction condition children had to make a forced-choice, whereas in the explanation case the task was open-ended. Though it may seem that this asymmetry would benefit the prediction condition, it has been argued that the explanation condition was artificially easy, and the prediction condition was artificially difficult. Wimmer and Mayringer (1998) argue that the most plausible response to the explanation task will refer to Band-Aids. Because the Band-Aid box is empty, there is no alternative to the correct description of Bill’s false belief. Bill wouldn’t be looking for anything other than Band-Aids, and so when prompted to give a mentalistic explanation of his search, the child has little choice but to mention Band-Aids. The lack of symmetry between the two tasks seems to favor the explanation task over the prediction task. Others have also questioned these findings for similar reasons (e.g. Moses & Flavell, 1990; Perner, 1995).
In another study, Robinson and Mitchell (1995) tested 3 to 5-year-old children’s ability to predict behavior caused by a false belief, and compared this with their ability to explain that same behavior, and found that children were more successful on the explanation task than on the prediction task. The prediction task was a version of the unexpected transfer task involving two distinguishable twins, Steve and Joe, who are shown putting their ball in a red drawer. While Steve is out of the room, Joe moves the ball into a blue drawer. Steve later returns to the room with his mother, who asks the twins where the ball is. The subject is asked where Steve will look for the ball. The explanation story followed an identical procedure, only this time a picture was used that showed the twins dressed in the same color clothes so as to make them indistinguishable. As in the prediction task, the children were asked if Steve, who went outside, knew that the ball was in the blue drawer. The story continued with the two twins in the room with their mother, who asks where the ball is. The children were then shown a final picture depicting one twin standing next to the red drawer and the other twin standing next to the blue drawer. The children were asked: “So, this one’s gone to the wrong place, hasn’t he? Why’s he gone to the wrong place, is it because he went outside, or because he stayed inside?”

Robinson and Mitchell’s findings have also come under attack. For instance, Perner (1995) has argued that children who predicted incorrectly may have resorted to guessing in the explanation task. Robinson’s subsequent attempts to rule out the possibility that the performance of the 3-year-olds is due to guessing have not been successful (Wimmer & Mayringer, 1998).

In their recent study Wimmer and Mayringer (1998) found that false belief explanation was at least as difficult as prediction. In this study, children, ranging in age from 3 1/2 to 6 1/2-years-old, were presented with an explanation task, as well as with a prediction/explanation task. Two different stories were acted out in this study, each with an explanation condition and a prediction/explanation condition. The first story
portrayed a girl named Ann who left her book in the cloakroom cupboard, and while she played outside, her teacher moved the book to the playroom cupboard. In the prediction/explanation condition, the subject was asked where Ann would look for her book when she returned from outside. If the subject answered correctly, the question was then posed: “Why then does Ann go to the cloakroom to get her book?” If the subject answered incorrectly, the experimenter corrected the response, and then asked the explanation question. In the explanation condition, the story was continued, showing Ann looking for her book in the cloakroom cupboard. The subject was then given the same explanation question as in the former condition.

The second story was similar, portraying Peter who wanted to buy some ice-cream. In the morning, the ice-cream truck was at the playground, but Peter didn’t have any money. He went home for lunch, and then left home with money to buy the ice-cream. While Peter was eating, the ice-cream truck moved from the playground to the train station. Both the questions in the prediction/explanation condition and the explanation condition are similar to those in the story involving Ann and her book.

Children were credited with explanatory competence if they answered at least one of the explanation questions correctly. Wimmer and Mayringer found no significant difference between children’s ability to predict and explain. Overall, 63% of the children were predictors, and 60% were explainers. Among the 3 1/2 to 4 1/2-year-olds, prediction was found to be slightly easier than explanation, but not significantly so (50% predictors and 30% explainers).

Bartsch (1998) criticizes this study for the asymmetry between the two cases. She argues that while in the prediction condition the child is offered a forced-choice between two options, the explanation question is open-ended. She argues that this makes the explanation condition more difficult than the prediction condition. Moreover, children must have sufficient verbal skills to give an answer in the explanation case, while in the prediction condition children only need to indicate one of two locations. However,
because a number of different sorts of explanations were accepted as correct (e.g. both earlier location answers and epistemic answers were counted as correct), it seems to that the explanation condition was, in fact, easier than the prediction condition. Nonetheless, there is an obvious asymmetry in the two conditions, and we feel this is reason enough to question the conclusions drawn from the study.

This summary of the research shows that the question of whether children can explain before they can predict is still open. In the present study we test the hypothesis that explanation precedes prediction, while attempting to avoid some of the methodological problems mentioned above. Two problems of asymmetry have hampered direct comparisons of children’s performance on prediction and explanation tasks. First, there has been asymmetry due to the kind of task, forced-choice vs. open-ended. There has also been asymmetry of task demands due to purported bias towards reality in the prediction condition but not in the explanation condition. In the current study we resolve these difficulties, by making both prediction and explanation conditions forced-choice, and by giving the subjects the opportunity to refer to reality in the explanation tasks. By making the two conditions symmetrical, we avoid the methodological problems seen in the previous studies.

**Method**

**Participants**

Fifty-five children aged 2 years 11 months to 4 years 11 months (29 boys and 26 girls) participated in this study. For the purpose of analysis children were grouped in two age-groups; Group 1: 3-year-olds, age-range from 2 years 11 months to 3 years 11 months, and Group 2: 4-year-olds, age-range from 4 years to 4 years 11 months.

The children were drawn from an American Midwest preschool of a relatively diverse economic and cultural nature. All available children of the appropriate ages who passed an English comprehension requirement were included in this study. Because this school is affiliated with a university, parents give general consent at the time their child is
enrolled. The director of the school acts on behalf of the parents to give consent to the specific studies. Six children spoke English as a second language, but were included in the study after passing the story comprehension questions. Two ESL children were excluded after missing the comprehension questions.

Design and Procedure

Four different false belief stories were told to each child, two testing the child's ability to predict the behavior of a character who was entertaining a false belief, and two testing the child's ability to explain the behavior of a character who had a false belief. The two prediction tasks consisted of variations of the classic unexpected transfer task. All stories were illustrated by color pictures on 8 1/2 by 11 inch laminated paper. The two prediction stories consisted each of 6 panels, and the two explanation stories consisted each of 4 panels.

The first story (Prediction 1) involved a girl Sue who hid a bar of chocolate in a blue box before going outside. While she was away, a second girl named Jenny came into the room, found the chocolate bar inside the blue box, and ate the chocolate. When Sue returned, Jenny was still in the room. Children were then asked a memory question: “Do you remember where Sue left the chocolate? Where did she leave it” as well as a reality question: “Do you know where the chocolate really is right now? Where is it?” Once a child had given correct answers to both of these two questions, the test question was given: “Where will Sue go to get her chocolate? Which place will Sue look for her chocolate?” This story is nearly identical to the classic moved-object false belief task, yet instead of portraying an object moved from one location to another, the object was eaten, and thus inaccessible to Sue. This limits the ability of a child to refer to the actual location of the chocolate, for the chocolate no longer exists.

The second story (Prediction 2) preserved the details of the classic unexpected transfer task. This story included two boys, Alex, who put a teddy bear in the cupboard, and Ralf, who dropped the bear behind the couch when Alex was out of the room.
Children were again asked one memory question and one reality question, and after successful performance on these questions, the test question was given: “Where will Alex go to get his teddy bear? Which place will Alex look for his teddy?”

The third and fourth stories tested for the child's ability to explain a behavior already performed through an appeal to the character's false belief. The first explanation story (Explanation 1; Figure 1) portrayed a boy, Sammy, who had been taken to the zoo every Saturday by his Aunt Ellen. Last week Sammy was frightened by a snake, and so he didn't like the zoo anymore. This week Aunt Ellen decided to take Sammy to the pool instead, but she did not tell him her intention. Sammy was shown crying in the car. The child was then asked the memory question: “Do you remember where Aunt Ellen usually takes Sammy on Saturdays? Where?” and the reality question: “Do you remember where Aunt Ellen and Sammy are really going today? Where?” After correctly answering these questions, the child was asked the test question: “Why is Sammy crying? Which of these two places is making him cry?”

The second explanation story (Explanation 2) portrayed a girl, Dina, whose mother told her that they were going to the park for her birthday. Instead, they were really going to Dina's surprise birthday party, and Dina didn’t know about the party. Dina asks her mother if she can take her camera, telling her that she wants to take some pictures. At this point the child is asked the memory question: “Do you remember where Dina’s mom said they are going?” and the reality question: “Do you remember where they are really going?” After successfully answering each of these questions, children were then asked the test question: “Why does Dina want to take her camera? Which of these two places does Dina want to take a picture of?”

Each interview was conducted in a space outside the classroom by one of four experimenters, all of whom were white females. Experimenters were occasionally accompanied by a teacher or teacher-assistant from the preschool when this was deemed necessary to put the child at ease. Each experimenter went through three to five days of
building rapport in the classroom before initiating the testing. The sessions began with a warm-up task. Children were shown drawings of a camera and a teddy bear and asked to identify them. Since these objects were used in the vignettes, the warm-up task served to familiarize the child with the drawings as well as to give them confidence in answering simple questions. This also helped determine whether the child recognized cameras and their function of picture taking. After the warm-up task, children were told the four stories. The stories were presented in one of four orders (P1-P2-E1-E2, P2-E1-E2-P1, E1-E2-P1-P2, E2-P1-P2-E1), and the order of presentation was varied among the children.

The researcher told the stories verbally while illustrating them with still drawings. The drawings were left on the table during the interview, so that the children could refer back to earlier events if necessary. After each story children were asked three questions. The memory questions (e.g., "Where did Sue put her chocolate?") and the reality questions (e.g., "Where is the chocolate now?") served to test the child's comprehension of the story. These questions could be answered by pointing to a picture or an object in the picture.

Subjects who did not answer both comprehension questions correctly when first asked were then presented the relevant features of the story for a second time before the comprehension questions were asked again. The two children who did not answer these questions correctly on the second try were excluded from the study. In most cases the alternate answers were not mentioned aloud, but were pointed to simultaneously by the researcher (e.g., "Which of these two places?"). If a child was hesitating in her response, the alternate locations were mentioned by name, and this was noted.

For the prediction tasks, the test questions referred to the location where the character would go next, and for the explanation tasks the test question asked which place was causing the character's behavior. Again, children only needed to point to a picture, or an object in the picture, in order to answer the questions. If the initial response was
not one of the two possible options, the child was asked to make a forced decision. For example, when a child responded to P1 by saying that Sue would go to the store to get some more chocolate, the investigator said: "Yes, but if she had to look in one of these two places, which one would she choose?" After the test question, the child was asked an open-ended ‘why’ question, e.g., "Why does Dina want to take a picture of the park and not the party?"

Results

Preliminary analysis of the data showed that there was no order effect of task presentation, so the data were collapsed. Preliminary analysis also showed that girls and boys did not differ in their performance on the false belief tasks.

A mixed-design Age (2) by Type of Task (2) ANOVA was used to analyze the data. The analysis was run using SPSS™ and the method of sequential sums of squares was used to account for unequal sample sizes (Tabachnick & Fidell, 1989, pp. 341). Table 1 shows the mean composite scores on the explanation and prediction tasks for each of the two age-groups. There was a main effect of age, $F(1,54) = 4.49, p = .04$, but no main effect of type of task, $F(1,53) = .31$, n.s.. Moreover, no significant age by type of task interaction was found, $F(1,53) = .66$, n.s. Thus children in both age-groups did not find explanation easier than prediction. A one factor ANOVA confirmed that, as expected, when both types of tasks were combined, the 4-year-olds (Mean = 3.12, SD = 1.03) were found to perform significantly better than the 3-year-olds (Mean = 2.52, SD = 1.6) children, $F(1,54) = 4.49, p = .04$. 

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Discussion

A main finding of this study is that 3 to 4-year-old children did not find explanation easier than prediction when confronted with a false belief scenario. As such our results confirm the findings of Wimmer and Mayringer (1998), but they are at odds with other studies, including Robinson and Mitchell (1995). We did find the expected age effect, with overall performance improving with age.

Bartsch (1998) has argued that a methodologically sound test of prediction and explanation must make both tasks either open-ended or forced-choice, and there should not be an asymmetry with regard to the plausibility of the choices in each task. Our way of dealing with this challenge was to design an interview session in which both prediction and explanation tasks were forced-choice, and to create explanation stories that, like the usual prediction stories, allows the child to refer to reality.

At this point we should review some of the reasons that were given to defend the expectation that explanation develops before prediction in the case of false belief. First, we will examine Moses and Flavell’s (1990) argument which concludes that explanation is cognitively less demanding than prediction. Their justification for this position is that when children see someone behaving in a way that is inconsistent with a desire the child expects the actor to have, that anomalous behavior will serve as a clue to the actor’s actual belief.

However, this argument would only be successful if it were true that all cases of explaining behavior involve a behavior which is prima facie inconsistent with the actor’s desire. And it is not true that we only offer explanations of anomalous behavior. Nor is it true that anomalous behavior always results from a false belief. In the present study, for example, under the Dina and her camera condition children were asked to explain a behavior (i.e. wanting to take a photo) which would be appropriate regardless of the character's belief, and in this particular case her belief cannot be read off her behavior. Because of this, Moses and Flavell’s argument does not apply to all cases of explanation,
and so their argument cannot be used to defend a general claim about the relative simplicity of explanation compared to prediction.

Another reason given in support of the assumption that explanation precedes prediction is that children need not avoid referring to reality in explanation tasks, and the reality bias is thus not expected to affect their response (Robinson & Mitchell, 1995). However, in our explanation vignettes children were given the opportunity to refer to reality, and to correctly answer the test question the child had to avoid any temptation to respond based on the actual state of affairs. We gave children the opportunity to refer to either location (e.g. the zoo or the pool; the park or the party), but to correctly answer our explanation questions, children had to avoid referring to the place where the character was actually being taken. It seems, then, that explanation is not intrinsically distinct from prediction with regard to a reality bias. Rather, in some cases one must avoid referring to reality when giving an explanation, while in other cases this is not necessary. The same applies to prediction.

We conclude that there is no reason to expect that explanation is easier than prediction based on considerations of a reality bias. Moreover, since earlier studies which did find a distinction between prediction and explanation (Robinson & Mitchell, 1995; Bartsch & Wellman, 1989) generally used a prediction story with a reality bias, and an explanation story without one, their results may be based on that fact alone. Therefore, these studies may tell us little about the methods children use to predict and explain behavior. Such considerations emphasize the importance of not generalizing from a specific explanation task used in a particular study to explanations in general. The three features of explanation discussed above turn out not to be necessary features for all cases of explanation, despite the fact that they may be relevant for a great many cases of explanation.

As discussed in the introduction, acceptance of the theory-theory is another reason for expecting that explanation precedes prediction (Bartsch, 1998). From this
perspective, it has been suggested that children have a desire-centered psychology which immediately precedes the development of the full belief/desire theory. The recognition of an explanation for anomalous behavior (e.g., searching for a desired object in a location other than its actual one) causes, or precipitates, a shift in the theory. Only after revising the theory based on this new information can children use the theory to correctly predict false belief behavior.

There are a number of responses that can be made to this claim. It seems that the simultaneous development of a capacity to explain and a capacity to predict is at least consistent with the theory-theory. This is because as soon as the explanation is generated by a child, the theory will be modified and that explanation will lead the child to make the correct prediction. In fact, one can argue that if the capacity to explain behavior develops before the capacity to predict, the truth of the ‘little scientist’ understanding of theory-theory is undermined. It would be unreasonable to expect that after the theory is modified by the creation of a new rule (e.g., ‘people look for things where they think they are,’ rather than, ‘people look for things where they are’) the child will continue to use the rejected rule when predicting behavior.

However, the co-occurrence of prediction and explanation does not rule out the possibility that cognitive mechanisms associated with predicting and explaining human behavior are distinct. We believe that one of the reasons it is important to investigate the differences between prediction and explanation is that it affords studying the main assumption that underlies the theory of mind debate, which is that children and adults attribute beliefs and desires both when predicting and explaining behavior. In fact, it can be argued that the assumption made by all parties in this debate, i.e. that prediction and explanation are of essentially the same character and involve the same cognitive capacities, is not warranted (Andrews, 2002). Through the study of scientific explanations philosophers have found that explanation does not always parallel prediction, in part, because not all predictions of a phenomenon will provide an
explanation as well. The symmetry of scientific prediction and explanation was introduced by Hempel and Oppenheim in their celebrated deductive-nomological account of scientific explanation (Hempel and Oppenheim, 1948). They argued that an explanation consists of a general law and initial conditions (the explanans) which deductively entails the phenomenon to be explained (the explanandum). One can also use the explanans to predict an occurrence of the phenomenon, for the explanandum follows logically from it.

The symmetry thesis in scientific explanation quickly came under attack. Philosophers developed counterexamples showing that not all cases of prediction provide explanations. Sailors understood that there was a constant conjunction between the phases of the moon and the tides, and they used this law to predict the tides. However, until Newton, no one knew why there was this constant conjunction, and there was no explanation of the tides. Another notable example is Bromberger's flagpole. Though the length of the flagpole's shadow can be explained by reference to the height of the pole, the position of the sun, and the general law of rectilinear propagation of light, the length of the flagpole is not explained given the other facts. These facts do not resolve the question of why the flagpole is a certain height. However, this information can be used to deduce, or predict, the height of the flagpole (Salmon, 1989).

It seems that there is a widespread assumption among those studying folk psychology that attributions of beliefs and desires are necessary to both predict and explain human behavior. However, the lessons from philosophy of science should cause us to be suspicious of such an assumption. It is possible that there is symmetry between psychological prediction and explanation, but there is no reason to take this for granted. Instead, the two abilities should be examined separately and only then should conclusions be drawn.
References


Table 1
Mean Composite Scores on False Belief Tasks for Each of the Age Groups

<table>
<thead>
<tr>
<th>Age Group</th>
<th>False Belief Task</th>
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<tbody>
<tr>
<td></td>
<td>Explanation(^a)</td>
<td>Prediction(^a)</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>3-year-olds</td>
<td>1.35 (.61)</td>
<td>1.17 (.81)</td>
<td>1.26 (.53)</td>
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<tr>
<td>(n = 29)</td>
<td></td>
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<tr>
<td>4-year-olds</td>
<td>1.54 (.65)</td>
<td>1.58 (.76)</td>
<td>1.56 (.52)</td>
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<tr>
<td>(n = 26)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (N = 55)</td>
<td>1.44 (.63)</td>
<td>1.36 (.80)</td>
<td>1.40 (.54)</td>
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\(^a\) Standard deviations are shown in parentheses
\(^a\) Out of 2
False and limiting beliefs are like parasites: they stay inactive in the mind until some thought or event triggers their response. Then they impede people’s ability to think sensibly and rationally, and they affect perceptions and perspectives in a pernicious manner (Sisgold, 2013). Positive psychology offers practical methods that help us question and unravel false beliefs. At the core of each of them is the hope of gaining awareness of thoughts, creating a better understanding of one’s belief system. Positive Education. Positive education focuses on developing a student’s well-being as he or she goes through important developmental stages in their life (Seligman, Ernst, Gillham, Reivich, & Linkins, 2009). Understanding an explanation. Listen to a professor’s explanation to practise and improve your listening skills. Do the preparation task first. Then listen to the audio and do the exercises. Preparation. Transcript. Professor: OK, before we continue, does anybody have a question? Oh, lots of questions, I see. OK, we’ll go one at a time. Yes? Student: Thank you. You talked about Fibonacci numbers in the lecture. Sorry, I don’t understand. Can you explain? Professor: Of course. FALSE BELIEF UNDERSTANDING 405 appropriately structured test situations. One of Fodor’s proposals was to change the standard false belief task in a way so that H1 would not result in a unique action prediction, for example, by splitting up the chocolate and transferring it to not one but two different locations in Maxi’s absence. However, the expected improvement of 3-year-olds’ action predictions in this altered version of the standard task was not found (Wimmer & Weichbold, 1994). Another implication of Fodor’s theoretical account of why 3-year-olds fail in the standard tasks is that the False Belief Understanding in Young Children: Explanations do not Develop Before Predictions. Article. Jun 1998. These desire and reality orientations in explanation are similar to response tendencies in prediction and suggest a lacking in understanding of the causal links between misleading informational conditions, epistemic states, and resulting actions in younger children. View. Show abstract. Understanding and explanation are both central topics in philosophy of science and epistemology. But how are the two related? One popular view is that understanding is just the cognitive state you are in then you can explain something. Another view is that understanding involves explanation, but also involves other cognitive abilities, such as an ability to explain other things. Finally, some argue that understanding needn’t even involve explanation at all. Key works. Early work on explanation which emphasize its role in generating understanding include Friedman 1974 and Salmon 1993. Stre