



The Reading Room: b/d/p Reversal & Transposition Problems & Strategies to Help Correct Them - February 2025

When folks think of dyslexia, they often think of students having b/d/p reversal problems. They believe that this is a sure sign of dyslexia. Well, the truth is that they aren't entirely wrong nor are they entirely right.

Noted reading researcher and neuroscientist, Dr. Stanislas Dehaene calls this phenomenon, "mirroring". Most children mix up these letters when they are quite young. Essentially these letters are all formed with the same elements, but in different positions. Before the brain becomes specialized for reading children do not differentiate their positional aspects. An example of this with something that is not a letter goes like this. If you see a chair upside down, it is still a chair. If you see a chair lying on its side, it is still a chair. If you see a chair hanging upside down on the wall, it is still a chair. Therefore young children who have not learned to read will mix up these specific letters because they are essentially the same. The "letter box" area of the brain (occipito temporal area) has not been repurposed to attach particular sounds to these similar letters.

For those of you who think that letter reversals are a primary hallmark of dyslexia, you are partially correct. If children are still consistently making these errors after around eight years old, they may also exhibit other characteristics of dyslexia and possibly should be tested. As with any characteristic of dyslexia, we need to look at the whole picture and see if the child is struggling with other aspects of reading.

At the end of this article I have attached some resources. Whatever strategy or strategies you choose to try, please remember that the strategy will be most useful if it is presented in a multisensory way and you will need to provide students with lots and lots of practice with the following letters: b, d, p, and sometimes q.

As a Dyslexia Therapist for the last twenty years, I will share with you what have been the most efficacious strategies for my students over the years. I have worked with students who appear all along the Dyslexia Spectrum, from very mild to extremely severe. I have to say that I have never had a student who did not respond to a Structured Literacy approach to teaching

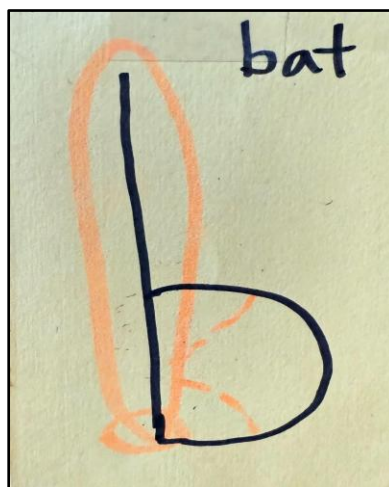
reading. Those students with letter reversal issues also learned to identify the correct letters. This isn't necessarily a quick fix. Some students will have to work for months to learn to accurately identify and write the correct letter, but eventually they will succeed.

The first thing I do, once I identify students' trouble spots, is to share with the students what they are having trouble with. There is research to support the notion that if students know and "own" their trouble spots, that awareness will help students focus on these issues. Students quickly know what letter/sound correspondences are problematic. At the beginning of every lesson I have students verbally identify that bs and ds, ps and sometimes qs are trouble spots and remind them to use their index cards for reference. When we start the writing portion of the lesson, I will ask them again to identify their trouble spots. Remember to plan your lessons with lots of words that include these letters. Do not avoid them! Students need lots and lots of practice with these letters, in both reading and writing.

That brings me to another important component of remediating b/d/p reversals and transpositions. We know that decoding (reading) reinforces encoding (spelling) and encoding reinforces decoding. Teaching correct letter formation can be very helpful in remediating reversal issues. Many students who struggle with reading also struggle with writing. These students often write their letters from the bottom up and reverse or transpose the positions of the components b, d, and p. Direct instruction in letter formation in the early grades is very important. Cursive writing instruction in second and third grade is very important as well. (see The Reading Room: Cursive Writing)

Strategy 1.

Many programs use the keyword bat for b. Students say b - bat - /b/. For students who mix up b and d I have this simple graphic.



This photo is an actual index card that I use with one of my students. It's simply a drawing of a b with a bat and ball drawn in orange. The b stands out in black. I place this card on the student's desk or table so that they have access to it at all times. They can use it to "check" on which letter is which. I over teach the b and then simply say the other one is the d. This works well for most students.

I say most students because recently I had to come up with another strategy for a student that just wasn't getting it with the card shown above. This student had persistent errors with b, d, and p.

Strategy 2.

For this particular student I had to come up with a strategy that was a bit more powerful and thankfully it is working. He is now making at least 75% fewer errors with these letters.

First, I changed the keywords for d and p. I kept the keyword for b.

b - bat - /b/

d - doughnut - /d/

p - pole - /p/

When we begin a lesson I ask this student, "What letters are we going to pay particular attention to?" b, d, p, "What comes first on the b?" the bat, "What comes first on the d?" the doughnut, "What comes first on the p?" the pole. I ask these questions throughout the lesson to ensure that the student will focus on these trouble spots while reading and writing. We practice proper letter formation with these letters as well as others that are not formed correctly. This student has an unusual habit of writing capital s'es all the time, so we also focus on that. With this explicit, repeated practice my student has become much more accurate.

My hope is that these strategies will be useful to you and your students. Remember to implement them in a multisensory manner and to give your students repeated practice with reading and writing these tricky letters.

Eyes on Reading - Stanislas Dehaene & Emily Hanford

<https://youtu.be/4NWaTw36i8?si=dC8aAc7l0IWes3l>

The OT Toolbox - Multisensory Strategies for b/d/ Reversals

<https://www.theottoolbox.com/multi-sensory-strategies-for-b-and-d-reversals/>

Academic Study on b/d Reversals

<https://journals.sagepub.com/doi/abs/10.1177/002221947300600604>

For questions, please contact:

Chris Fox - cfox@ces.org, Jessica Powell - jpowell@ces.org