



## Overview

If you recall from the last module, we performed some variability analysis to try and determine if JB was plateauing or if she just had an off day and is really on a good overall path to her goal. In the sections that follow, we will continue to work with and track JB as she progresses towards her fluency goal. We will also learn a bit about assessing goal achievement and one of the techniques you can use to accommodate data that is found to be an outlier.

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**NOTE:** See online **Chapters 6 and 7** for more in-depth coverage of analyzing client data using *Therapy-Science* and the included *iGraph™* analysis tools.

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## Moving Ahead


While one should not put too much importance on a single data point. It feels like week 19 results might be more telling than most. We are currently operating with some uncertainty about what direction JB is headed. It will be nice to see if the next data point can resolve some of that uncertainty so we can gain some confidence that the current treatment plan is an effective approach for JB. Where is she headed with her performance? Let's find out.

### *iGraph™* Practice 1.6.a

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1. After this week's session (week 19), you recorded the performance assessment score shown below. Add this data point to the Data Markup and update the *iGraph™*. Now look to see if we can gain some more insight into week 18. Was it an outlier?

WEEK	PERCENT FLUENT
19	46%

To help answer this question look at the updated trend corrected variance visualization. Click on the trendline visualization  and then click on the trendline shown in the *iGraph™* to reveal the variability visualization. What can we say about week 18 now? Do we need to check the details panel?

Should we show the “picture of progress” to JB? If/when you show and review it with her, will the discussion be about how week 18 was just a “bad day” and we can ignore it (i.e. it was an outlier)? Or will it be about the possibility that she is

plateauing and perhaps you may need to look at modifying the treatment plan again?

Is JB still on track to reach her goal near the end of the semester? Take a moment and write your thoughts down in the space below. It is a good idea to record your thought process so that you can have a record of your rationale for future reference.

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At the end of the last practice exercise, you were posed with a series of questions that were specific to your work with JB and the current state of her progress. These are the kinds of questions you (and your clients) will have throughout the intervention process. You can extract some hints at the answers through data analysis.

When it comes to questions like “When will my client reach their goal?”, the answers may not be definitive – as you know forecasting is a complex process that has a non-trivial element of uncertainty. However, you can constructively set expectations and make rational and justifiable adjustments to your treatment plan based on the answers to these (and other) questions. Hopefully, the answers that you formulate will help guide you as you move forward and make the most of the time you have with your clients.

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***NOTE:** Goals play an important role in the treatment process. Whether it be reaching a final destination or just a milestone along the treatment journey, defining and setting specific goals is an important component of the treatment process – both functionally and psychologically for your client. See online **Chapter 4** to obtain more detail about intervention plans and constructing goals.*

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## Goal Achievement

Achieving a goal is a useful milestone for client progress and evaluating a client's therapy plan. We'll continue to examine JB's journey through treatment and the analysis tools and rationale that comes along with making our treatment decisions while working towards her goal.

If you were able to complete the last exercise, then you saw that the data suggests that week 18 was an outlier, a "bad day". With that in mind, you can gain some confidence that – despite week 18's performance – there is no clear reason to modify the intervention plan. You can move forward with an eye towards achieving the goal of 55% fluency by the end of the school year (i.e. week 25). We will look at that process next.


### *iGraph™ Practice 1.4.b*



1. You are going to add a few more data points to JB's iGraph™ based on the therapy that you delivered and monitored over weeks 20 through 22.

WEEK	PERCENT FLUENT
20	52%
21	53%
22	56%

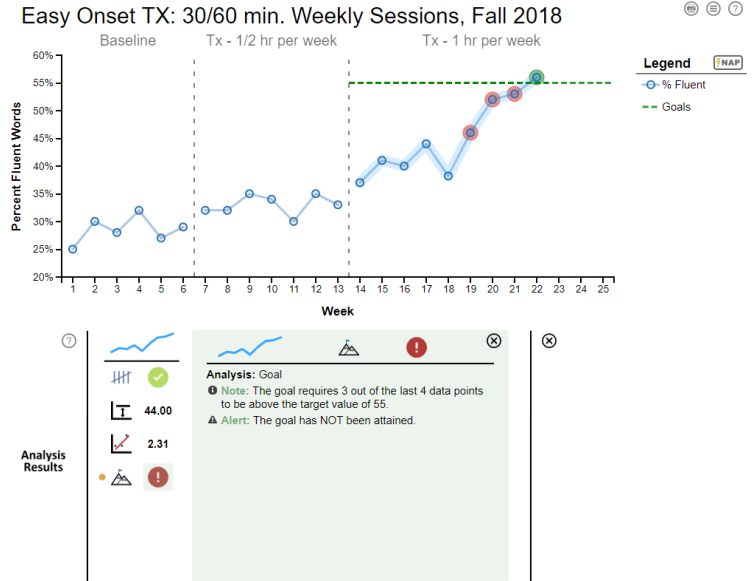
When you are done updating the iGraph™, examine data. What do you see?

2. The first thing you may have noticed was that the week 22 data point crossed above the goal line. Yay! It looks like we've achieved our goal! The next thing you will notice is that the data point from week 18 really stands out – even without the trendline or the trend corrected variability visualization. Let's analyze the data path again and take a closer look.

Sure enough, if you click on the data path, add a trendline , and then click on the trendline in the iGraph™ to reveal the trend corrected variability visualization; you can see that the week 18 data point is an outlier. The trendline details window confirms it by explicitly listing the value as falling outside the Residuals Tukey Fences.

But wait! There's something else that catches your eye. It looks like the status for the goal  is a red alert icon . That can't be good. Let's check out what is going on there.

- Click on the trendline visualization icon to toggle the trendline off. Then click on the goal icon to show that visualization. Also, bring up the details panel for the goal. The iGraph™ should look like the one shown here.



- You'll notice that the goal details panel reminds us that the goal wasn't just to reach 55% fluency, it was to do so 3 out of the last 4 sessions. The visualization on the iGraph™ highlights this by marking the last 4 data points with either a red (did not meet the goal level criteria) or a green (met the goal level criteria) highlight. The goal details window states this explicitly.

With only one session at or above this mark, we need to continue treatment according to our plan. You continue working with JB for a few more weeks and record the following data for sessions 23 through 25.

WEEK	PERCENT FLUENT
23	54%
24	57%
25	58%

Add these data points to JB's iGraph™.

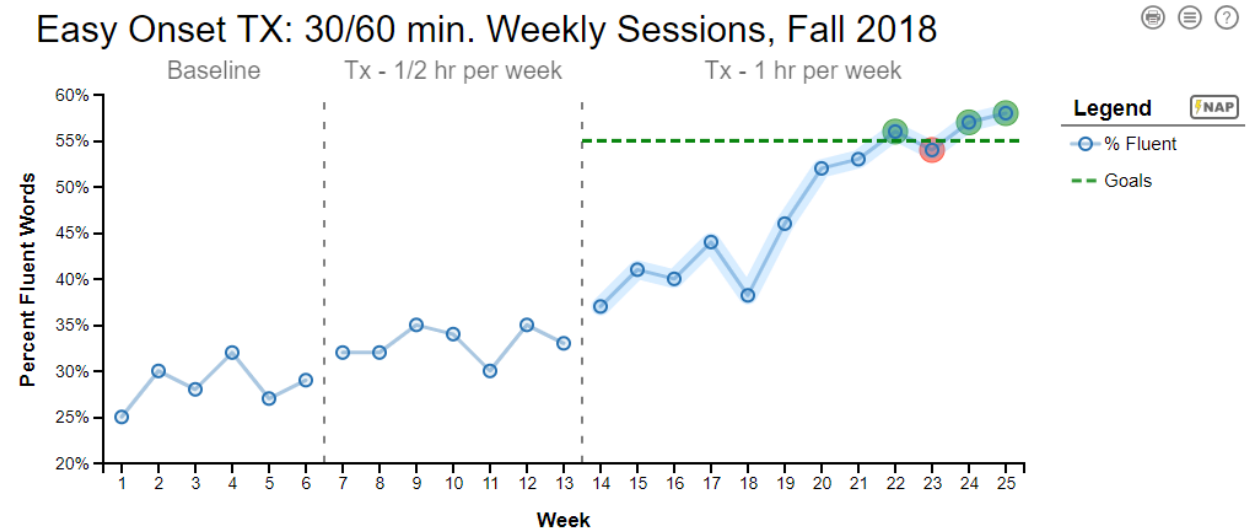
- Did JB reach her goal? Check visually using the goal analysis and decide whether you should share this visual analysis with JB.

### Ghosting and Data Point Notes

This stage of our journey with JB ends. It is time to revisit her intervention plan and plot a course for the next chapter of her fluency development. You can utilize iGraph™ to provide

visual documentation of her progress and achievements as well as a narrative (if you kept good notes with her iGraph™ data in the Notes section below).

However, it is also just as likely that you will want to export this graph so it can be included in her file – or perhaps share it with a supervisor so you can discuss future plans for JB. To help emphasize the fact that she met her goal, you export an image of the iGraph that shows the goal analysis visualization (shown below).



As you look over the data, you see a story of your journey, the decisions you made and the rationale behind your course of treatment. But you also see something that bothers you.

That darn week 18 data point.

Based on all the weeks that followed, you are now more certain than ever that it was an anomaly, a “bad day” – an outlier! In fact, while going over the image with JB you mention how that data point was really the only setback and she says that she remembers that day because that was the day she failed her driver’s test.

Of course, it all makes sense now. It would be nice if you could show that somehow that was not a normal day – remove it from the iGraph™, well... maybe not entirely, but at the very least make sure that it was not given the same importance as the other data points.

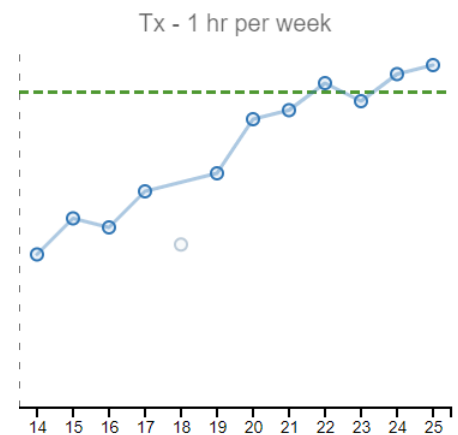
### iGraph™ Practice 1.4.c

- Now let's see about excluding that data point from the data that recorded JB's progress, but not remove it entirely from her record. We can do that by **ghosting** the data point.

Ghosting the data point will keep the data as part of her record, but it allows you to perform analysis and create visuals that do not include that point in the calculations. It's there as part of the record, but it's a ghost, and is not considered part of the relevant data.

To ghost a data point, simply enclose the data point in parenthesis ( ) in your Data Markup. Remember, you can go directly to the markup for a data point by clicking on it in the iGraph™ plot area. In this case, we are enclosing week 18, the data point that is the in-line percentage calculated data **41, 40, 44, (47/123), 46,** point. So, we enclose the entire fraction in parenthesis. You can see an example on the right (where a portion of the data markup for JB is shown and the ghosted point is highlighted).

Update the iGraph™ and see how the data point is now still present, but not included in the data path for that phase. The data path in the third phase of your iGraph™ should look like the one shown to the right.



- So now the iGraph™ looks like a more characteristic record of her progress and the ghosted data point also captures the fact that week 18 was an outlier that we do not want to include as part of JB's typical performance. Hopefully, you've added information in the Notes section about the failed driver's test and atypical behavior to help explain why you ghosted that data point. However, to help make it easier for you (and others) to remember the details, it may be useful to include some additional information that is not in the Notes section – perhaps something embedded in the iGraph™ itself.

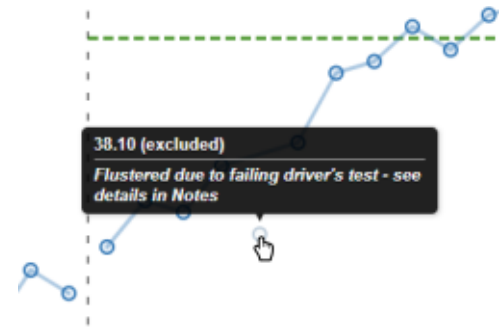
If you didn't already know, you can hover your mouse pointer over a data point and a tooltip will show you the data value. When we do this for the week 18 data point, we also notice that the tooltip gives the value and a reminder that it is "excluded".

We'll build on this helpful information by adding a note to the tooltip. This requires a further modification to the markup for this data point.

To add a data point note, you simply include the note in brackets [ ] just after the data point itself, but prior to the comma (or phase line) that may follow it. An example for our current data point is shown below.

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44,(47/123)[Flustered due to failing driver's test - see details in Notes],46,52.
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The syntax for the note is highlighted. Notice how the brackets enclose the text of the note. Now add your own note to this data point and then see how it is displayed when you hover and pause your mouse pointer over the ghosted data point.



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*NOTE: There are some ways to help keep your data markup less cluttered by adding referenced notes. In addition, this allows standardized notes to be reused. See [How-To: Add Notes to Your Data Points](#) for more details.*

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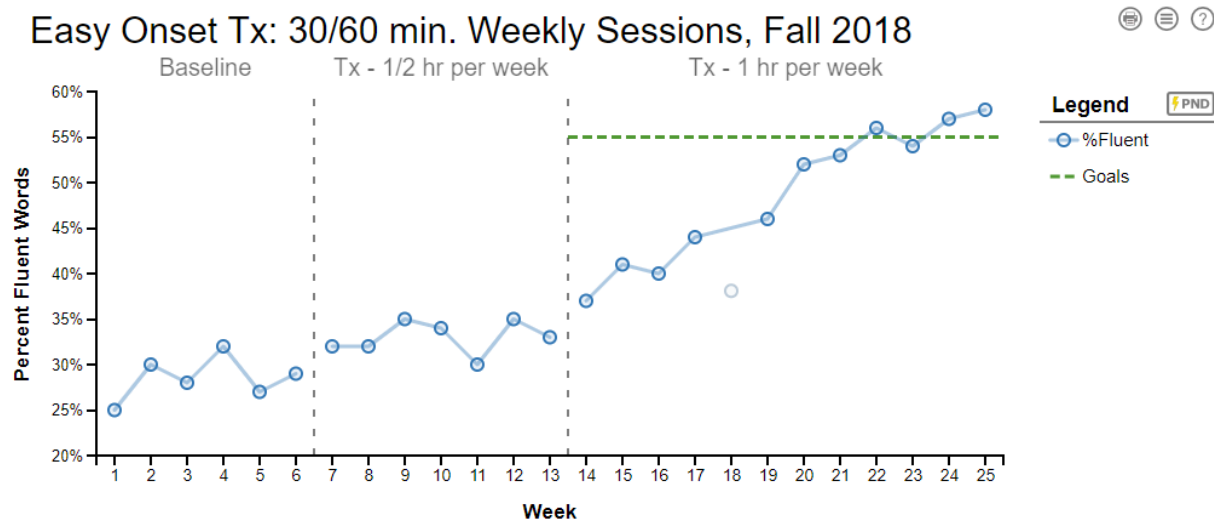
## Congratulations!

You have now followed JB and her journey from assessment through to achieving her first goal. Along the way you were able to discover and utilize some of the visual and statistical analysis features included with Therapy-Science and the iGraph™. These features include both visual-qualitative and visual-statistical tools that are convenient to use. They can provide insight into the current state of treatment and assist in forecasting where that process is headed.

Was there ever any doubt that JB would reach her goal before the summer break? Given that this is a series of learning modules, it was highly unlikely that you would fail to end on a high note. Despite the lack of suspense and urgency that treating a real-life client may bring, I hope you were at least able to enjoy the process and get a feel for how tracking data, monitoring progress, and constantly challenging (and using data to support) your assumptions can help you develop a rational approach to navigating the uncertainty that is a natural part of the therapy journey. The resources of Therapy-Science and the convenient analysis tools that are part of an

iGraph™ can make that process easier for you – allowing you to focus more on your client and get the most of your limited time together.

I have included a picture of the final iGraph™ below. Take a moment now and look it over – starting from the baseline data that JB had brought to her first session, moving on to our first treatment phase, and finally as we moved through the second treatment phase and managed to overcome a slight hiccup (week 18) to reach the goal by the end of the school year. The graph tells the entire story and supports all the decisions you made along the way.



As a contrast, take look at the table on the next page. It contains all the same numerical data as the single case graph we developed using the iGraph™ technology. However, the table does not deliver nearly the same richness of information.

Imagine reviewing JB's case using the image above. You can easily convey details, clearly illustrate – as well as support – your rationale for when and why you adjusted treatment. Something as basic as knowing when JB reached the stated goal is clearly presented in the visual. Now imagine that same review using the table below, a much more challenging conversation.

Can you see the jump in performance that occurred when you began treatment? The lack of improvement that precipitated a change in treatment? The reduction in trend corrected variability that helped support your decision to continue with the new, longer treatment? How about the fact that week 18 is an outlier?

It is difficult to – if not impossible – to see these events in the table knowing they are there. Imagine how difficult it would be to see them as they were happening.



PHASE	WEEK	PERCENT FLUENT
<b>BASELINE</b>	1	25%
	2	30%
	3	28%
	4	32%
	5	27%
	6	29%
	7	32%
<b>TX – ½ HR PER WEEK</b>	8	32%
	9	35%
	10	34%
	11	30%
	12	35%
	13	33%
	14	37%
<b>TX – 1 HR PER WEEK</b>	15	41%
	16	40%
	17	44%
	18	38% (excluded)
	19	46%
	20	52%
	21	53%
	22	56%
	23	54%
	24	57%
	25	58%

Data is important, but it is even more important to leverage that data with effective visual and statistical tools that can provide productive insight. Whether it be employing the visually interactive iGraph™ or a simple hand drawn single case graph, learning about and utilizing all the available resources (both visual and statistical) at your disposal will help both you and your clients achieve more productive outcomes.

Therapy-Science has developed the iGraph™ with the idea that we want to make it easy for you to use these (and other) tools so you can gain the most thorough understanding of your client's progress as possible. By taking some time now to understand what these capabilities are and how they are used, you can develop your diagnostic and treatment competencies to get the clearest picture of your client's needs. A clear understanding of client progress can help you to navigate through uncertainty as well as recognize – and celebrate – their accomplishments.

Below are listed a series of How-To resources that you can use to obtain more information on analyzing data series and presenting therapy data effectively using Therapy-Science and the iGraph™ analysis methods.

## Relevant How-To Resources

Additional information on some of the technical steps covered in this tutorial are covered in the following How-To articles. You can find these in the **How-To Index** that is in the **Quick Links** section of the **Resources** page.

- How-To: Enter Data
- How-To Analyze Data I: Single Data Series
- How-To Analyze Data II: Level, Trend, and Variability
- How-To: Data Entry Using In-line Percentage
- How-To: Add Notes to Your Data Points