

## **Ka-ching Final Report**

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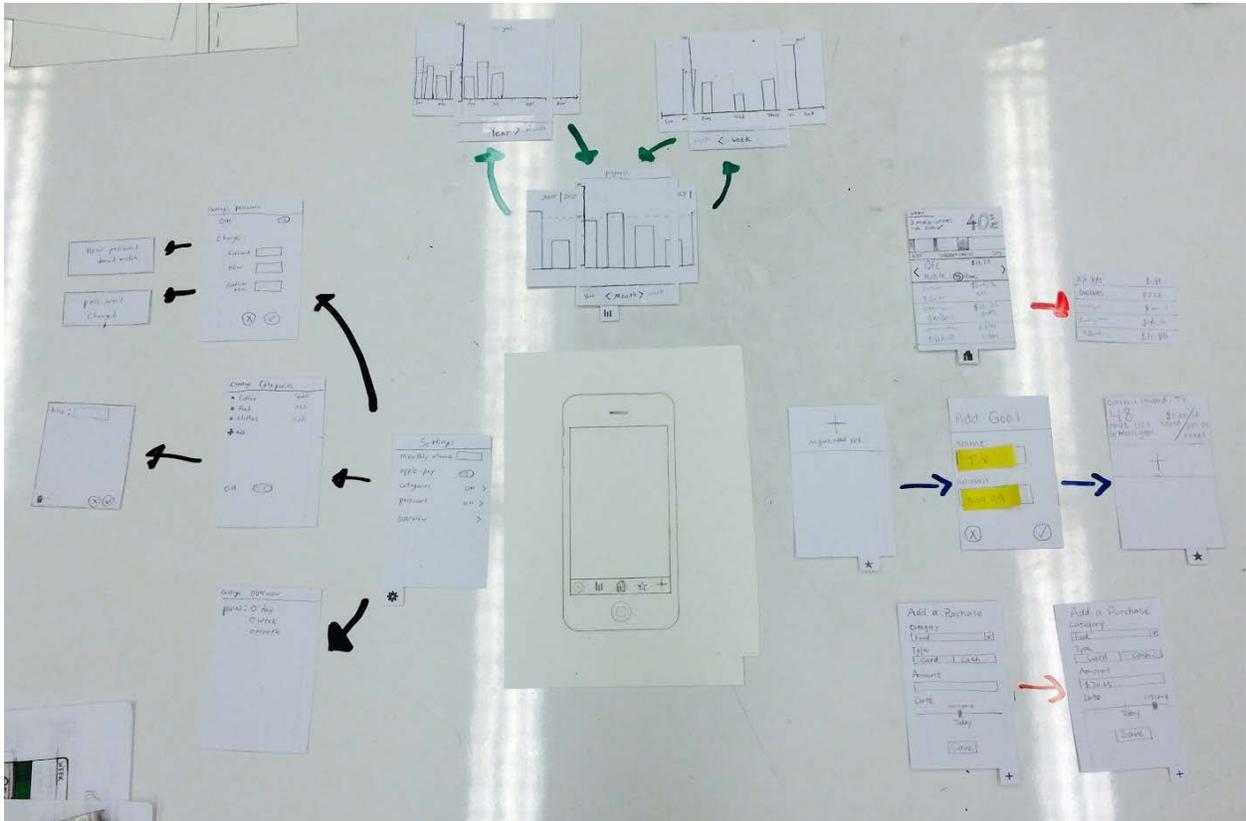
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### **Problem and Solution Overview**

Everyone who reaches a certain level of financial security faces the same problem, how do I want to spend my money once my basic needs are met? Many have ideas about what discretionary items they want to spend on, a trip with friends, a nice pair of boots, a new gaming system, but many find themselves using up their discretionary money on small items coffee, beer, movie tickets without even noticing. There is a tension that exists between long term goals and short term gratification. We believe that a smartphone app that would track discretionary spending, help people reflect on what they spend on, and help them set goals for their spending could solve this problem. This app would help people monitor their spending and make sure that whatever extra money they have they are spending on the things they actually want to be spending on.

## First Paper Prototype

We started out with a simple app layout, giving each of our main task its own tab on the main menu, along with a tab for settings, a home screen and a manual entry tab. We knew we would be including these tabs with secondary tasks eventually and wanted to explore any confusion about them before moving forward. Our primary tasks were setting a goal and reviewing recent purchases to evaluate how you are doing against your budget.



## Testing Process

We decided to look for participants in the Allen Commons. We chose this environment because there would be a large number of people who could possibly be in a target user range. Students typically have enough money to participate in discretionary spending but do not have too much money to not worry about it. We also chose it because we believed staying in a common area would make our participant feel comfortable while still being quiet enough to conduct the test. For each we sat at a table with the participant with the administrator on one side of them, the user on the other and the note takers across the table.

For the first participant, we asked them to perform the following tasks:

- Add a goal: a TV that costs 849.99
- Review spending from June
- Designate spending as discretionary
- Add a purchase

For the following two participants, we changed “Add a goal” to “Set a goal” because we thought that the word ‘add’ lead to the participant automatically pressed the plus sign tab. We also changed the review spending task to “check if you were over your goal for monday” so that the user would have something specific to look for and analyze in the review section of the app.

Because our first participant seemed very rushed and stopped the testing session a little bit early, we gave the following participants a time estimate of 15 to 20 minutes for how long the usability test would take. We also better explained the difference between a discretionary and nondiscretionary purchase to the second and third participants using examples such as eating out, getting a latte, or buying alcohol, which we may not have conveyed fully to the first participant.

## Testing Results

The heuristic evaluation revealed many valuable issues. The participants wanted to be able to more easily maneuver through different years, months, and weeks. Our initial design was not very flexible in this case and needed a lot of scrolling on screen rather than having a one-tap solution. We decided to add in functionality at the top of the review screen that would allow the users to tap between consecutive years, months, and weeks while also keeping the scrolling functionality in order for the user to be able to maneuver based on their preference.

Another issue when reviewing spending was the original 'goal' line that allows the user to see if they are over or under budget for a given year, month, week, or day. We already had the idea of setting a goal/reward in the app, and this line was meant to show relation to budget or allowance, so the terminology of 'goal' was misleading and confusing. We changed the word 'goal' to budget on the review screen so that the user would not get confused on whether they are reviewing progress towards their goal or reviewing their overall discretionary spending.

During the first usability test, the participant did not know that the star tab was the place to add a goal. He thought that adding a Purchase was where to add his goal. In order to fix this confusion, we added an option to add a goal within the plus tab such that when the add a goal option is chosen, it redirects to the goals (star) tab. However, in the two following usability tests, both participants went right to the star tab to add a goal. As stated above, we changed our terminology when prompting the task, so we decided to leave both methods of adding a goal in.

We had a couple of different issues with designating purchases as discretionary on the home screen. The first participant thought that the pending purchases on the home screen were just his recent purchases, so when we asked him to review recent spending, he just tried to scroll the app's pending purchases. We then put the pending purchases into an expandable section with a notification telling the user how many purchases need reviewing to inform the user that the home screen contains a task that needs immediate action. The third participant caught on to this task very well. His only issue was that he did not know if slide left or slide right meant that a purchase was discretionary because our visual queues only said 'yes' or 'no'. We changed these to 'discretionary' and 'non' to be less ambiguous.

The in-class critique of the paper prototypes and our second usability test suggested that we should add an affordance to the graph screens in order to let the user know that they can scroll left and right. The first and third participants knew that the screen could scroll, but

the second participant was not as sure. We do not know completely whether the participant was confused because of the paper prototype or because of the scrolling functionality itself. We decided to add drop shadows to the left and right sides of the graph screens on the digital mockups to lend to the ability to scroll.

Critique of our digital mock-up resulted in a lot of useful changes relating to aesthetics and readability. We found that some of the colors and fonts were a little hard to read and that some of the Kerning was used inconsistently. The lack of a month view screen leads to some confusion. The clock at the top was seen as unnecessary. People also had some feedback on the wording of some of our text, including the “remaining” on the overview area under the percentage and the “discretionary” and “non” options in the designate discretionary screen. The add process confirmation screen was seen as unnecessary. People were also confused by the discretionary spending going from a 4 to the 5 items within the QFC purchase. It was also discussed if the orange in the graph and the circles under the future dates should be changed.

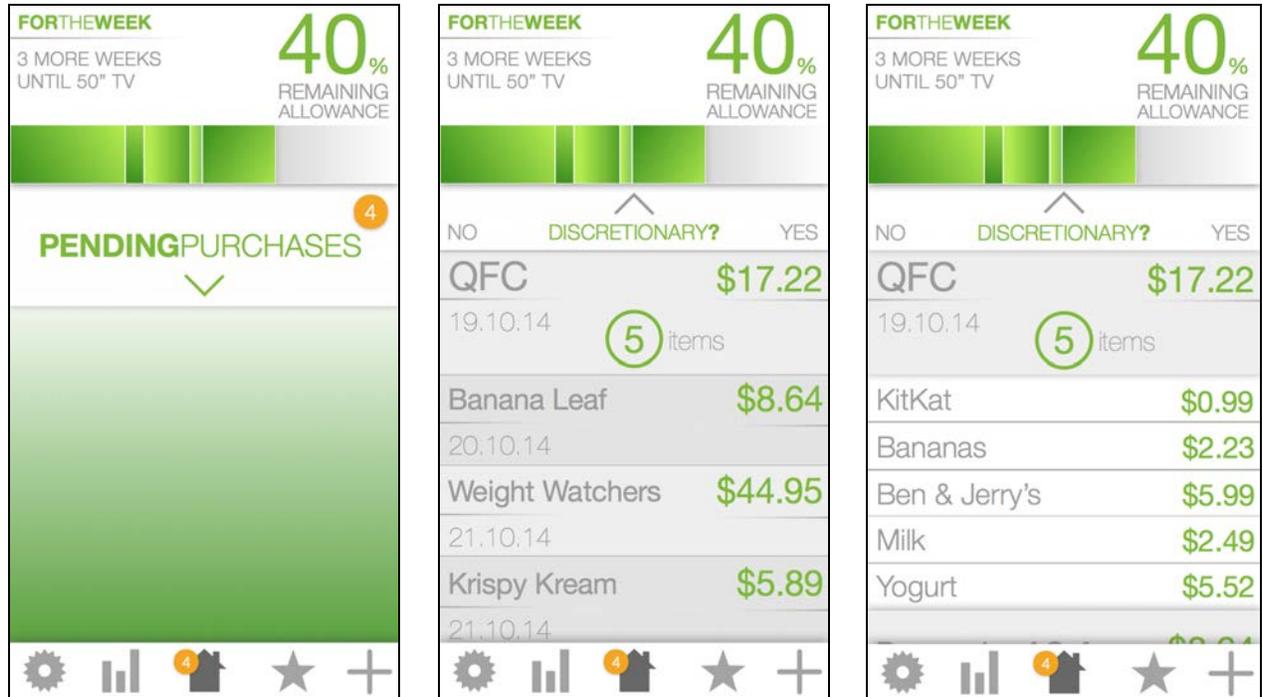
## Final Paper Prototype

Our final paper prototype version maintained the 5 tab set up. We found that in multiple usability tests that the participant really liked this layout. Our main changes were to the interactions contained in different tabs or to add more ways to move between them. One large change was to add a second way to reach the enter a reward screen so that users could reach it from the reward tab or the manual entry tab. We think this is important because this task is not performed often and may be hard to remember. Another significant set of changes was to the designate discretionary screen, where we changed what is initially displayed and added a notifications so that users will more easily understand that these purchases are pending and require extra action. We also altered interactions with the graphs, changing how the user can navigate between views and time frames.

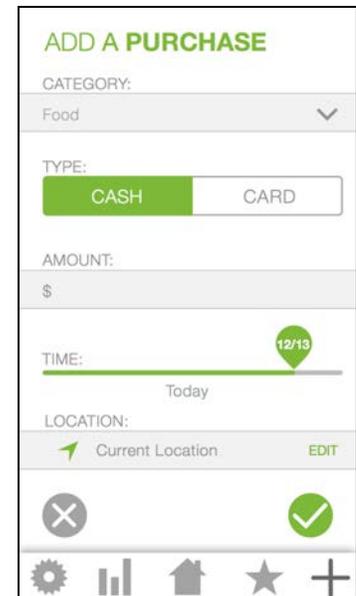


## Digital Mockup

We attempted to address every issue brought up in our in class critique. We made the navigation bar icons darker. We changed the wording in the overview bar from “remaining” to

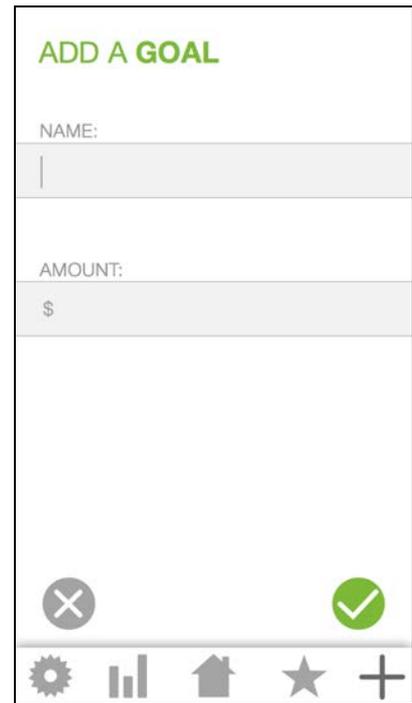
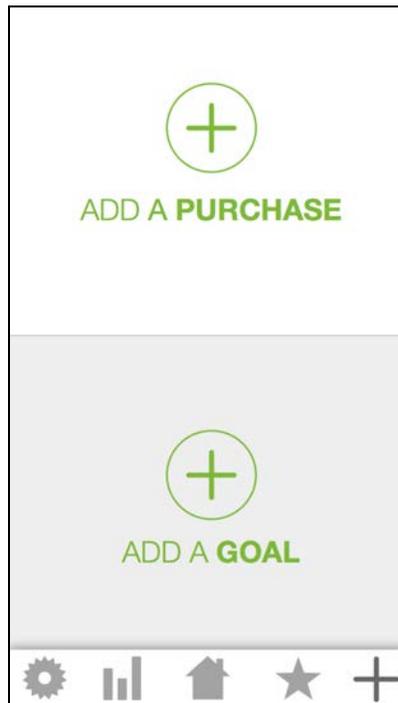
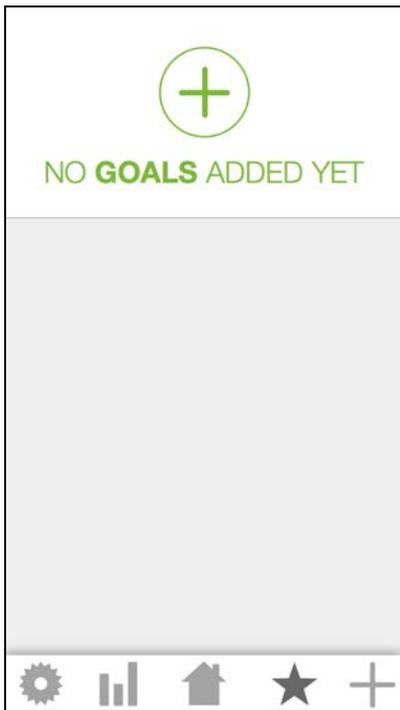


“remaining allowance”. Changed our header for the pending purchases bar to be more of a response to a question of “discretionary?” then “yes” and “no”. We also made the “yes” and “no” both grey so that there is no longer a jarring red. We changed the kit kat to cost “0.99” from “.99” to make it more consistent with common terminology. We added an intermediate view between the pending purchases and the QFC purchase breakdown screen to clarify the difference between the 4 pending purchases and the 5 items purchases at QFC. We made our fonts and colors more consistent between screens worked on by different members of the group. We tweaked the colors on the graph to increase readability. We added a month view to the set of graphs. We removed the clock from the overview bar and changed the wording from “3 more weeks until goal” to “3 more weeks until TV”, where TV was whatever goal the user had entered. We removed the confirmation screen for adding a purchase, instead redirecting the user to the home screen with a pop up window confirming it which the user



can remove by clicking anywhere on the screen. If the user doesn't click on the screen, the pop up window will disappear automatically. We discussed the orange on the graph as a group and decided to keep it. To make it seem less out of place we also made the notifications orange so that the orange represents things that need a certain sense of urgency or action. We decided to add the dots on the future timeline to the past purchases for consistency.

Our first task is to add a goal. The idea is that the user will add a goal, something they want to save up for into the app, so that the app will help them make less discretionary



purchases to help them reach their larger spending goal. From the home screen, the user can press the plus navigation tab and will be taken to a screen where they can choose to add a purchase or add a goal. Once they tap 'add a goal', they will then be redirected to the star tab where they have not yet added any goals. After they choose to add a goal, they will be prompted for the name of the goal and the amount. Once they save the goal, they will be taken to the original star tab screen that will show them their progress to their goal and will allow them to add a future goal to their goal queue.

Our second task is to review progress on spending based on the goal that they have set. From the home screen, the user clicks on the graph tab in the lower navigation bar. The user is taken to a screen of graphs. From here they can look at the year, month, or week view in relation to their allowance. Here they can easily see if they have spent more or less than their allowance.



## Discussion

Our team found the prototyping and testing process to be very productive. Getting our prototype to a point where users were successful in completing the tasks was extremely rewarding.

One of the key ideas that we really learned from the process was that talking to people removed from the design is extremely important. Throughout the process we, of course, became very familiar with the aspects of our design and found it hard to pick out aspects that may or may not be ambiguous or confusing to the user. For example, when our first user wanted to use the plus sign to add a goal, we did not even think to make that an option at first, as obvious as it seems.

As far as what we did not uncover, there were a couple of ideas that we did not pursue because paper prototyping and usability testing constraints. We had location/time based notification feature that we really wanted to include, but because the feature is not really a user initiated task, it would have been difficult to user test and validate the feature's purpose and design.

We found that our tests were more meaningful if we made changes to our prototype in response to feedback before conducting further tests. In this way we were able to see immediately if our changes made the prototype more clear and helped the user to be more successful in completing the tasks. This iteration helped us perfect our prototype to a point where our final user test resulted in only minor changes.

## Appendix

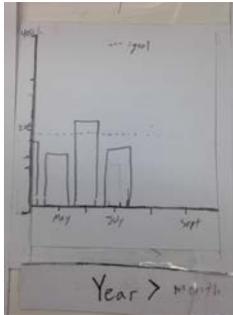
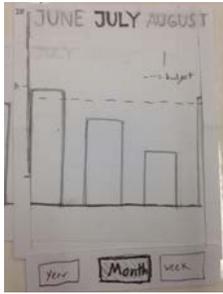
### Demo Script and Instructions

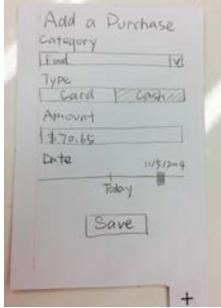
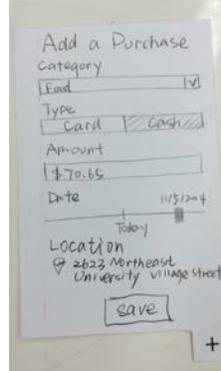
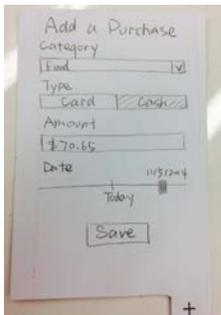
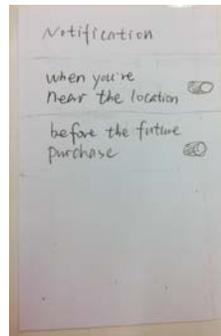
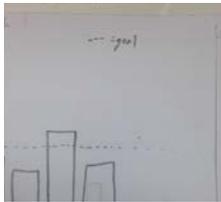
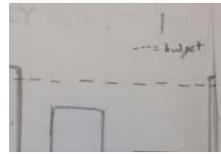
We are making an app aimed at helping people monitor their discretionary spending, so any spending that they do not need to make, like coffee, alcohol, eating out, etc. This is a rough draft of our design and right now we are looking for as many problems as we can find. We are not testing you, we are testing our design. It is really helpful for us if you think out loud, we want to know anything that you are confused by or that you get stuck on. Remember this is totally voluntary and you can stop whenever you would like. As we are trying to make as realistic of a setting as possible I cannot answer your questions as a typical user will not have someone on hand to get help from. If you would like I can answer any questions you have at the end. There are four tasks that I will read and then have you try to complete.

- Set a goal: a TV that costs 849.99
- Check if you were over or under your budget on Monday
- Go through your recent credit card purchases and designate which spending was discretionary
- Add a cash purchase

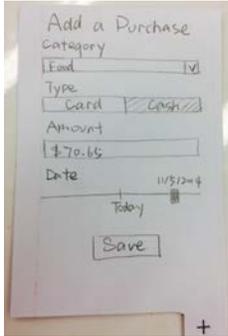
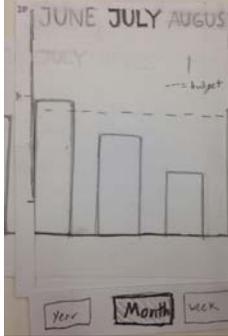
## Experiment Data

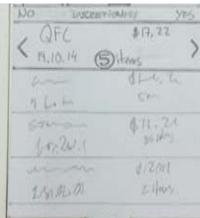
### Heuristic review 1

Image	Issue	Severity	Change	Fixed Image
	<p>Wanted way to click between years (from 2014 to 2013, etc.), confused by arrows between year/month/week</p> <p>Heuristic violated: User control and freedom</p>	3	Made day, month and year into tabs to switch views, and added title to which year/month/week you are viewing with carisol controls to switch between consecutive months/year/weeks	

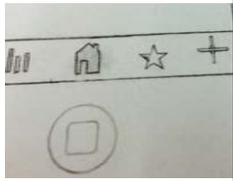
	<p>Wanted to know the location they make the purchase to keep track of the place they usually make discretionary spending.</p> <p>Heuristic violated: User control and freedom</p>	<p>2</p>	<p>Add a location item, it would be default the current location if they have the location service open.</p>	
	<p>Want to set a reminder about future purchase, worried about not being able to remember or edit</p> <p>Heuristic violated: Recognition rather than recall</p>	<p>3</p>	<p>Add option to set daily overview notification in settings menu</p>	
	<p>wording goal is too similar to idea of reward</p> <p>Heuristic violated: Consistency and standards</p>	<p>3</p>	<p>changed "goal" to "budget"</p>	

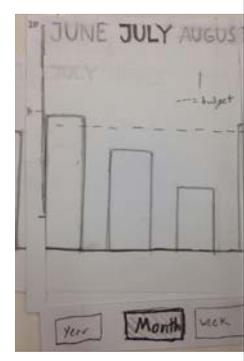
## Usability Test 1

Image	Incident	Severity	Fix	Fixed Image
	<p>tried to use plus to add goal, filled out full add purchase form thinking that it might not reply to goal.</p>	<p>3</p>	<p>We combined add purchase and add a goal into one tab. Users can still click on add button in the star screen, and once they do that it will take them to the plus screen. And if they saved the goal, it will go back to the star with an overview of the goal just being added.</p>	
	<p>Liked plus to add and star for goal</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>
	<p>knew to scroll on graph right away</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

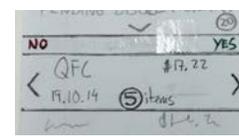
	<p>Thought home screen was an overview of current spending, did not realize that it was to designate which items were discretionary</p>	<p>4</p>	<p>We added a dropdown button that is on the home screen with a notification-esque alert of how many items need to be reviewed. This change maintains the urgency of having the notification be on the home screen but forces users to read that the list is of pending discretionary purchases and not all purchases.</p>	
	<p>Got that the controls were to swipe left and right for no and yes when told that the menu was for designating discretionary</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

## Usability Test 2

Image	Incident	Severity	Fix	Fixed Image
	<p>Like the simple layout</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>

	<p>did not know right away that they could scroll on graphs</p>	<p>2</p>	<p>We will add a visual queue to our digital mock-up that shows shading by edges of the visible graph area to make it seem more separate from the frame and more scrollable</p>	<p>not shown on paper prototype</p>
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### Usability Test 3

Image	Incident	Severity	Fix	Fixed Image
	<p>'yes' and 'no' were confusing because he didn't know if yes was in or yes was not in discretionary.</p>	<p>3</p>	<p>We changed the wording to "discretionary" and "non"</p>	