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Getting What You Want...or Not: Patient Experiences with Timing of Medical Feedback

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Author

Burreal, Shay Briane

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GETTING WHAT YOU WANT...OR NOT: PATIENT EXPERIENCES WITH
TIMING OF MEDICAL FEEDBACK

By

Shay Briane Burreal

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University of California, Riverside

APPROVED

Dr. Kate Sweeny
Department of Psychology

Dr. Richard Cardullo, Howard H Hays Jr. Chair and Faculty Director, University Honors
Interim Vice Provost, Undergraduate Education

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Abstract

The present study investigated the influence of alternate test result delivery methods on patient experiences, as well as the potential effects of matching between preference for and method of delivery. This study focused on two methods of medical test delivery: open-ended timing versus closed-ended timing. This study also investigated in how the timing of receiving test results, and the match between received and preferred methods, was associated with patients' satisfaction with care they receive, as well as personal experiences such as anxiety, rumination, and positive and negative affect. Overall, we found evidence for the role of timing and delivery method in satisfaction with care, but not other patient experiences. The exploratory findings found in this study provide some of the first steps in understanding the implications of how medical professionals should deliver medical test results.

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Imagine one day you discover a lump under your skin. You gather information that leaves you uncertain what the lump entails: a benign skin inflammation or cancer. This uncertainty motivates to visit your doctor, who refrains from a diagnosis but recommends a biopsy of the lump. You follow through on the doctor's recommendation, but the results of your biopsy will not be available for a few days. The doctor's office offers two options: you can schedule another appointment 2 weeks from now to get your results, or the doctor can call you when the results are in. Which would you prefer?

The average adult will undergo one medical test per year, to which few people look forward (Smith-Bindman et al., 2012). Although medical tests themselves have few inherent risks, most people do not relish the experience. Anecdotal evidence abounds regarding the stress of scheduling an appointment, traveling to the medical office, sitting in the waiting room, and finally undergoing the medical test. In many cases, however, distress does not end upon leaving the doctor's office. Instead, people then enter into the final stage: waiting for the test result. Research suggests that this waiting period can be more distressful than a bad outcome itself (Scott, 1983; Lebel et al., 2003). The present study examined how the delivery of test results, as well as patient preferences and expectations for the test's outcome, affect patients' experiences during the waiting period.

Patient Experiences Awaiting Medical Test Results

In addition to the stress of undergoing medical tests, patients often report that the uncertainty and fear they experience while waiting for the results is more distressful than the diagnosis (Lebel et al., 2003). Patients also report increasing dissatisfaction with the length of the wait for their results. Along with uncertainty and fear, studies have shown

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that patients also experience high levels of anxiety and depression. In a study that examined the psychological consequences of further testing after the completion of a breast cancer screening, it was found that 46% experienced high levels of anxiety, and 11% experienced clinical depression (Lampic, Thurfjell, Bergh, & Sjöden, 2001). In a separate study, women awaiting results of a breast biopsy reported levels of anxiety equal to those of patients admitted to psychiatric hospitals for anxiety disorders (Scott, 1983). Though many of these studies focus on the experience of waiting for cancer diagnoses, similar findings exist for in vitro fertilization (Boivin & Lancaster, 2010) and results of professional examinations (Sweeny et al., 2016). Repetitive thoughts, also termed rumination, commonly arise when a situation is uncertain and relate to fearfulness, depression, and lessened regulation of negative emotions (Sweeny & Andrews, 2014). This distress and rumination may not only affect the patient emotionally but may also have negative influences on the patient's physiological health, thus exacerbating whatever health issue currently exists.

Additionally, reducing patient stress can promote satisfaction and adherence to medically prescribed behaviors. Patients are more likely to adhere to recommendations delivered by their doctor if the patient reports a higher satisfaction with care (Manary, Boulding, Staelin, & Glickman, 2013). Moreover, effective communication between patients and physicians leads patients to be more likely to adhere to treatment recommendations (Zolnieriek & DiMatteo, 2009). Lack of patient adherence can be costly not only to the patient but the physician and the health care system as well (DiMatteo, Haskard-Zolnieriek, & Martin, 2012). If patients do not adhere to the treatment recommendations given by the healthcare professional, they may exacerbate the

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detrimental effects of their condition. Positive patient experiences are also related to medical adherence; therefore, focusing on ways to increase adherence, while decreasing the negative effects of nonadherence, is central to improvement of medical effectiveness.

Given the importance of maintaining positive patient experiences during these times of high distress, greater research is needed to understand the situational and interpersonal characteristics that lead to better coping. For instance, research shows that patients often rely on the interpersonal support of caregivers, family members, and friends. Immediately following a medical appointment, close to 80% of participants in one study had mentioned that the nurse was the most helpful person to whom they had spoken, and during follow-up interviews participants listed family and friends as extremely helpful (Lebel et al., 2003). Many participants also seek out online resources to help get them through difficult waiting periods, such as the National Breast Cancer Foundation website, which lists tips and techniques for developing coping skills applicable to the stressful wait for biopsy results (National Breast Cancer Foundation, n.d.). The American Cancer Society also provides information for patients about facing and understanding their diagnosis (American Cancer Society, 2015) and provides a forum for people to discuss their experiences. These forums provide patients with knowledge and tips that ostensibly help ease the demands of waiting for test results. Clearly, health professionals and patients alike recognize the importance of helping people cope with the stress of waiting periods.

Although numerous resources address how to improve experiences with waiting periods, researchers can also help minimize the stress of waiting by examining the format of the waiting period itself. For instance, medical professionals may be able to improve

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patient care by understanding the influence of how they deliver medical test results, both in actuality and in the expectations they create.

Open- Versus Closed-Ended Timing

Currently, no formal policies exist for how physicians should inform patients of their test results. A review of test delivery procedures found that very few practices had detailed rules for managing test results, and in most cases, each physician devised his or her own method (Casalino et al, 2009). In fact, due to this lack of guidelines, doctors commonly fail to inform patients of their test results. This “no news is good news” methodology may appear more pragmatic, but can result in patient misinformation or stress (Casalino et al, 2009). Therefore, if better systems are to be implemented, researchers need to first understand the effects of various test delivery method options.

Our study focused on two methods of delivering medical test results: (1) open-ended timing, in which patients are contacted whenever the results become available and time allows, versus (2) closed-ended timing, in which patients receive a specific time at which they will receive their results (e.g., appointment, scheduled phone call). These two methods differ in several ways in terms of patient experience. Patients who receive open-ended timing likely receive their results sooner than those who receive closed-ended timing. This likely difference is due to the appointment of closed-ended timing having to be scheduled after the results are guaranteed to be available, even if they may be available sooner. Also, open-ended timing relieves the patients from the inconvenience of scheduling an appointment on the doctor’s schedule. For example, one study found that among many participant accounts of their waiting experience, many commented on scheduling difficulties that extended their waiting period beyond what

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they found reasonable. These participants also noted that certain services were only available on certain days, or their appointment would be rescheduled due to the doctor attending a conference (Thorne, Harris, Hislop, & Vestrup, 1999). Therefore, open-ended timing allows for convenience and quicker delivery of results.

On the other hand, closed-ended timing also provides some benefits. Knowing that the results will be delivered at a specific time allows patients to prepare themselves for the outcome of the test. The action of “bracing for the worst” may provide a buffer in the process of coping with bad news (Sweeny et al., 2006). If a patient is given open-ended timing, they are given information without warning and therefore may not be prepared. In contrast, closed-ended timing might reduce stress during a waiting period because people are able to block out thoughts of the test or distract themselves until their appointment. Therefore, closed-ended timing allows for the alleviation of some stress due to the patient being able to know when he or she will receive the results and then can put it to the back of their mind until the time comes.

Overview and Hypotheses

Currently, very little research explores the different approaches to the delivery of medical tests. The only study we are aware of to directly address this issue found that a vast majority of healthcare professionals provide open-ended timing compared to closed-ended timing (Dooley, Sweeny, & Burreal, 2016). However, the preferences of the patients were equally split between the two approaches, resulting in half of patients not receiving their preferred approach, suggesting a large degree of mismatch between what patients desire and what they receive. Although this research provided insight into the current behaviors of physicians and the current preferences of patients, the study did not

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include information about how these delivery methods influence patient experiences. Therefore, in the current study, we investigate the influence of these alternate delivery methods on patient experiences, as well as the potential effects of matching between desire and actual delivery. In particular, we are interested in how the timing of receiving test results, and the match between received and preferred methods, influences patient satisfaction with care they receive, as well as personal experiences such as anxiety, rumination, and positive and negative affect.

Method

Participants

Participants ($N = 48$; 78% female; $M_{age} = 40.02$, $SD = 13.71$) were recruited from the Riverside University Health System (RUHS) Medical Center who were undergoing some form of medical test that involved some delay in receiving the results. The participants were eligible for \$10 compensation once they had completed the full study. They would receive \$5 after completing an initial survey, and another \$5 following completion of a second survey. Our sample was primarily Latino/a (72%), with a smaller proportion of Caucasian (non-Latino; 24%), and Black or African-American (4%). In our sample, these medical tests included x-rays and other scans (44%), blood work (23%), Pap tests (8%), mammograms (6%), biopsies (4%), and others (genetic testing, colorectal screening, eye exam; 15%). See Table 1 for full sample characteristics.

Procedure

At RUHS Medical Center, researchers approached patients awaiting previously scheduled appointments (prior to their appointment) and offered the chance to participate in a “study regarding medical waiting periods.” Researchers informed the participants

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that research team was interested in people's experience undergoing medical procedures (blood tests, x-rays, mammograms, pap tests, colorectal screenings, or biopsies) with the goal of figuring out best ways for patients to learn their medical test results. Participants were offered up to \$10 to complete two confidential online surveys: one immediately after the medical test (about 15 minutes), and the second shortly after they received their results (about 10 minutes). If patients agreed to participate, researchers immediately collected participant contact information for follow-up to determine eligibility. The current study examines the results of from the first survey only.

Within 24 hours, researchers contacted potential participants via email or text (based on participants' indicated preference) to determine eligibility. Participants were eligible for the study if a medical test was scheduled within three days following their appointment. If eligible, participants received the survey assessing their medical test experience shortly after they received the medical test, either immediately upon responding to the initial inquiry (if participants had already undergone their medical test) or after the day of their scheduled test. Researchers sent participants \$5 for completion of this survey.

Measures

The survey sent to the participants consisted of two main variable groupings: information regarding the medical test and patient experience during the waiting period. Each survey also contained questions regarding demographics of the participant.

Medical test information.

Type of medical test. We assessed the type of medical test undergone and the participant's history with that type of medical test. These two items assessed the specific

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medical test (e.g., “What type of medical test did you undergo?” “Have you ever had this test before?”). Participants selected the option that applied to them. The participants were given six options including the option of “Other.”

Anticipated method of feedback. We assessed the information given to the patient by the healthcare professionals with two items. These items assess the timing given to the patient and the manner of contact (“Which of the following best describes the information you received regarding when you would learn the results of your [_____] test?”). Additionally, participants indicated the mode of communication through which they were told they would receive their results (phone, mail, online, at an in-person appointment, other).

Preferred timing of feedback. We assessed the patient’s preferences with two items. These items assessed the patient’s preferred timing and their preferred method of delivery of the test results (“If you had a choice, which of the following would have been your preference for the information the doctor or nurse provided?”). Additionally, participants indicated the mode of communication through which they would have preferred to receive their results (phone, mail, online, at an in-person appointment, other).

Outcome prediction. We assessed the patients’ expectation for their test result with one item. This item assessed the percentage likelihood of the medical test result requiring treatment or a follow-up test (“How likely do you think it is that your test will show that everything is fine?”; 0% = *I definitely need treatment or follow-up testing*, 100% = *Everything is definitely fine*, $M = 58.65$, $SD = 32.35$).

Waiting period experience.

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Anxiety. We assessed both trait and state anxiety with four items. For state anxiety, participants rated the extent to which they agree with statements regarding how they felt in general at that point (“I feel tense,” “I feel worried”; 1 = *Strongly Disagree*, 5 = *Strongly Agree*; $M = 2.69$, $SD = .94$, $\alpha = .76$). Participants also indicated how often they had been bothered by “feeling nervous, anxious or on edge” as well as “not being able to stop or control worrying (1 = *Never*, 7 = *Very Frequently*; $M = 3.26$, $SD = 1.24$, $r = .79$).

Rumination. We assessed rumination with five items related to the tendency toward repetitive, negative thinking (e.g., “I can’t stop thinking about my upcoming test results,” “My upcoming test results are never far from my mind”). Participants rated the extent to which they agreed with each statement (1 = *Strongly Disagree*, 5 = *Strongly Agree*; $M = 3.65$, $SD = 1.42$, $\alpha = .86$).

State positive/negative affect. We measured state affect using an adapted version of the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegan, 1988). This scale contained four items related to positive emotions (content, excited, happy, confident). We combined these positive emotion items into a single positive state affect score ($M = 3.11$, $SD = .86$, $\alpha = .76$). This scale also had six items related to negative emotions (upset, distressed, angry, ashamed, sad). We combined these negative emotion items into a single negative affect score ($M = 2.19$, $SD = .74$, $\alpha = .70$).

Satisfaction with care. We assessed patients’ satisfaction with the care they received from their health professional with 10 items (e.g., “I am satisfied that my doctor took care of me,” “My doctor really cares about me as a person”). Participants rated the

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extent to which they agreed with each statement (1 = *Strong Disagree*, 7 = *Strongly Agree*; $M = 5.40$, $SD = 1.50$, $\alpha = .95$).

Results

Outcome Prediction

First, we examined the intercorrelations among outcome prediction and other dependent variables. We conducted a Pearson correlation between outcome prediction and the other dependent variables. We found significant differences between outcome predictions on satisfaction with care ($r(47) = .35$, $p = .01$); state anxiety ($r(46) = -.44$, $p = .002$); negative emotions ($r(45) = -.40$, $p = .007$); and rumination ($r(47) = -.42$, $p = .004$).

Closed vs. Open Ended Timing

Next, we examined the association between closed- and open-ended timing with our dependent measure. Overall, 46% of participants received closed-ended timing, while 54% received open-ended timing. We conducted independent sample t-tests between groups who had received closed-ended and who had received open-ended timing on the waiting experience variables. We found no significant differences between groups on state anxiety (closed: $M = 2.69$, $SD = .99$; open: $M = 2.57$, $SD = .79$), $t(37) = .43$, $p = .67$; positive affect (closed: $M = 2.88$, $SD = 1.01$; open: $M = 3.22$, $SD = .75$), $t(36) = 1.21$, $p = .23$; negative affect (closed: $M = 2.09$, $SD = .60$; open: $M = 2.26$, $SD = .80$), $t(37) = .74$, $p = .46$; or rumination (closed: $M = 3.48$, $SD = 1.42$; open: $M = 3.74$, $SD = 1.58$), $t(39) = .54$, $p = .59$. Additionally, we found no significant difference in outcome predictions by timing between participants who had received closed-ended timing ($M = 60.79$, $SD = 26.10$) and participants who had received open-ended timing ($M = 56.90$, $SD = 35.51$), $t(38) = .39$, $p = .70$. However, participants who had received closed-ended timing

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indicated greater satisfaction with their care ($M = 5.88$, $SD = .98$) than participants who had received open-ended timing ($M = 4.94$, $SD = 1.64$), $t(39) = 2.18$, $p = .04$.

For anticipated feedback delivery method, 64% of participants received their results in an in-person appointment, 28% received their results by phone, and 9% received their results via mail. We conducted one-way ANOVAs between methods of delivery on the waiting experience variables. We found no significant differences between methods of delivery on anxiety, $F(2,17) = .18$, $p = .84$; positive affect, $F(2,16) = .80$, $p = .47$; negative affect, $F(2, 17) = .22$, $p = .81$; rumination, $F(2,18) = .26$, $p = .77$; or outcome prediction, $F(2,45) = .39$, $p = .68$ (see Table 2 for means and standard deviations). However, we found a marginal difference in satisfaction with care, such that people who expected results delivered by phone ($M = 5.61$, $SD = 1.41$) had higher satisfaction than those who expected results delivered in an in-person appointment ($M = 4.05$, $SD = 1.74$) and results delivered via mail ($M = 3.73$, $SD = 1.42$), $F(2,18) = 3.18$, $p = .07$.

Timing and Delivery Preferences

Next, we examined how preference for feedback timing is associated with the waiting experience. Overall, 42.5% of participants preferred closed-ended timing, while 57.5% preferred open-ended timing. We conducted independent sample t-tests between groups who had a preference for closed-ended and who had a preference for open-ended timing on the waiting experience variables. We found no significant differences between groups on state anxiety (closed: $M = 2.60$, $SD = .79$; open: $M = 2.63$, $SD = .98$), $t(42) = .12$, $p = .90$; positive affect (closed: $M = 3.23$, $SD = .83$; open: $M = 3.04$, $SD = .90$), $t(41) = .70$, $p = .49$; negative affect (closed: $M = 2.27$, $SD = .67$; open: $M = 2.05$, $SD = .76$),

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$t(42) = 1.02, p = .31$; rumination (closed: $M = 3.77, SD = 1.44$; open: $M = 3.46, SD = 1.42$), $t(44) = .72, p = .47$; or satisfaction with care (closed: $M = 5.04, SD = 1.78$; open: $M = 5.69, SD = 1.19$), $t(44) = 1.50, p = .14$. Additionally, we found no significant difference in outcome predications between participants who had a preference for closed-ended timing ($M = 57.50, SD = 36.36$) and participants who had a preference for open-ended timing ($M = 58.85, SD = 29.51$), $t(44) = .14, p = .89$.

Timing Matched vs. Unmatched to Preference

Next, we examined whether receiving one's preferred timing (i.e., matching) related to different waiting experiences. Overall, 60% of participants were matched to their preference, while 40% were not matched. Among the matched, 42% received closed-ended and 58% received open-ended. Furthermore, among the unmatched, 56% received closed-ended and 44% received open-ended timing.

We conducted independent samples t-tests between groups who had matched to their preferred timing and who had unmatched to their preferred timing. We found no significant differences between groups on anxiety (matched: $M = 2.49, SD = .81$; unmatched: $M = 2.80, SD = .98$), $t(36) = 1.05, p = .30$; positive affect (matched: $M = 3.26, SD = .84$; unmatched: $M = 2.76, SD = .93$), $t(35) = 1.69, p = .10$; negative affect (unmatched: $M = 2.08, SD = .72$; matched: $M = 2.26, SD = .65$), $t(38) = 1.22, p = .23$; rumination (matched: $M = 3.46, SD = 1.59$; unmatched: $M = 3.76, SD = 1.37$), $t(38) = .61, p = .54$; or outcome prediction (matched: $M = 62.29, SD = 30.47$; unmatched: $M = 53.44, SD = 32.18$), $t(38) = .88, p = .38$. Additionally, we found no significant difference in outcome predictions between participants who matched their preference ($M = 62.29, SD = 30.47$) and participants who were unmatched to their preferred timing ($M = 53.44,$

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$SD = 32.18$), $t(38) = .88$, $p = .38$. However, participants who matched indicated greater satisfaction with their care ($M = 5.09$, $SD = 1.68$) than those who were unmatched ($M = 5.65$, $SD = 1.22$), $t(39) = 2.18$, $p = .04$.

Finally, we were interested in the association of match between expected and preferred method of delivery and waiting experiences. Overall, 38% of participants preferred their delivery method of results to be an in-person appointment, 52% preferred phone, 7% preferred online, and 2% preferred mail. Furthermore, 46% of participants matched to their preferred method of delivery, and 54% were unmatched. We conducted independent samples t-tests between groups who matched their preference and those who did not on the waiting experience variables. We found no significant differences between groups on anxiety (matched: $M = 2.77$, $SD = 1.06$; unmatched: $M = 2.63$, $SD = .85$), $t(45) = .50$, $p = .62$; positive affect (matched: $M = 3.08$, $SD = .90$; unmatched: $M = 3.14$, $SD = .84$), $t(42) = .21$, $p = .83$; negative affect (matched: $M = 2.31$, $SD = .84$; unmatched: $M = 2.09$, $SD = .65$), $t(44) = 1.03$, $p = .31$; rumination (matched: $M = 4.09$, $SD = 1.26$; unmatched: $M = 3.25$, $SD = 1.46$), $t(46) = 2.13$, $p = .04$; or outcome prediction (matched: $M = 55.65$, $SD = 33.11$; unmatched: $M = 61.40$, $SD = 32.07$), $t(46) = .61$, $p = .54$. However, participants who had matched to their preference of method of delivery ($M = 5.90$, $SD = 1.18$) had higher satisfaction with care than participants who had unmatched to their preference of method of delivery ($M = 4.95$, $SD = 1.64$), $t(46) = 2.30$, $p = .03$.

Discussion

Waiting for uncertain news is highly anxiety provoking, particularly in the context of one's personal health. Due to the ubiquitous nature of medical testing, understanding how people await their medical results is essential to improving patient experience. In

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this study, we explored two different timing methods for delivering test results: open-ended and closed-ended timing. Open-ended entails no definitive time in which patients will receive their medical test results. Closed-ended timing, on the other hand, entails a definitive time to receive medical test results, such as through an appointment or scheduled call. In particular, we were interested in differences in patient experience between these two timings, as well as the role of preference—specifically how matching to preference influences the individual's experience. We summarize the findings below and highlight some of the most intriguing results.

First, we explored the overall role of the patients' expectations for the outcome of their test. Our findings suggest that patients who anticipated that everything would be fine were more satisfied with care they received from their medical professional. One interpretation of this finding is that patients are simply more satisfied when they leave an appointment feeling like everything will be fine. Similarly, patients felt worse (that is, they experienced more rumination, negative affect, and state anxiety) when they anticipated greater probability of undesirable results. This finding may be interpreted as an indication that these patients were continually worrying about their well-being because they anticipated the worst.

Second, we explored how the anticipated delivery method (that is, the timing their medical professional told them to expect) was associated with patient experience. In general, we found that people's experience of state anxiety, positive affect, negative affect, and rumination were relatively similar regardless of whether they received open- or closed-ended timing. However, those who had received closed-ended timing reported greater satisfaction with care than those who had received open-ended timing. One

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interpretation of this finding is that patients who received specific times to call or come in for test results may perceive their doctors as being more involved in their health.

Similarly, patients who receive closed-ended timing may believe their doctor is willing to pay more attention to detail and give the results their due time, whereas patients who receive open-ended timing may anticipate cursory involvement from their healthcare provider. On the other hand, more competent and involved doctors (that is, medical professionals with whom patients would generally experience greater satisfaction) may prefer scheduling appointments or specific times to call. Due to the lack of delivery method protocol, individual differences between medical practitioners may account for this relationship between timing and patient satisfaction. However, our data cannot directly address this interpretation, and further research is necessary to explain this relationship.

Next, we extended our investigation to cover not only the anticipated timing of the results, but also patients' preferred timing. Specifically, we were interested in differences in patient experiences based on whether patients received the timing they wanted (matched) or not (unmatched). Those who matched their preferred timing had marginally higher state positive affect. One interpretation of this finding is that people are generally in a more positive state after receiving what they want. If individuals are in a better mood, they are more likely to report a more positive experience than if they were in a bad mood. Moreover, this finding suggests that patient experience can be improved if patients are given the timing method that works best for them. On the other hand, our data cannot directly address this interpretation, and further research is necessary.

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Nonetheless, these findings imply that giving patients what they prefer can positively affect their patient experience.

Lastly, we investigated how receiving one's preferred method of delivery is associated with patients' experiences. Those who expected to receive a phone call indicated greater satisfaction with care from their doctor, followed in turn by people expecting to receive an in-person appointment and then receiving results by mail. Given the fast-paced nature of many modern cultures, a phone call may provide greater convenience, and thus greater satisfaction. Although the majority of participants indicated that they expected to receive their results at an in-person appointment, the majority of participants wanted to receive a phone call as their delivery method. Those who matched with their preferred delivery method also reported higher satisfaction with care than those who were unmatched.

Interestingly, though, those who anticipated their preferred delivery method (i.e., matched delivery method) reported greater rumination than those who were unmatched. Upon reflection we could speculate that even though a phone call was preferred by most patients (and most commonly matched to preference), inherent to this specific delivery method is the constant possibility that the next phone call they receive will be from the healthcare professional with their results. Thus, patients expecting a phone call may find it more difficult to distance or turn off repetitive thinking (i.e., ruminative thoughts) related to the anticipated results. Thus, satisfaction and enjoyable waiting experiences may not always be simultaneously possible. Doctors and patients should both be aware of these tradeoffs when deciding which delivery timing and method is most appropriate given the situation.

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Implications

The exploratory findings described above provide some of the first steps in understanding the implications of how medical professionals deliver medical test results. Although some of our findings deserve further investigation to fully understand, we believe this study provides some useful insight for medical professionals hoping to improve their practice. Primarily, our findings suggest that patients receiving preferred timing method increases patient satisfaction with their care. In regards to delivery of medical test results, doctors should give patients the option to choose between open-ended and closed-ended timing. Closed-ended may be more convenient for patients, but open-ended timing is likely more convenient for both patients and doctors. More importantly, if a patient reports a high level of satisfaction with care and a generally positive experience, they are more likely to adhere to treatment recommendations given to them by their doctor (Manary, Boulding, Staelin, & Glickman, 2013). Therefore, higher levels of satisfaction with care are more likely to result in more positive experiences and greater adherence—which further emphasizes the importance of delivering test results in the ways patients prefer when possible.

Patients themselves may also benefit from the findings described above. For patients, this study reveals that receiving their preference matters to them. Giving patients an option for their timing would allow patients the opportunity to reflect on which timing is more beneficial for them. Closed-ended timing provides them with an appointment that results in higher satisfaction with care. On the other hand, open-ended provides them with convenience and possibly quicker results. In future visits, patients should speak to

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their healthcare professional about their preference and the possibility of those preferences being honored.

Limitations and Future Research

Although our study provides useful insight into how medical test delivery influences patient experiences, we should also note its limitations. For one, our initial sample of participants recruited from the Riverside University Health System (RUHS) consisted of a convenience sample of patients who were present at RUHS during recruitment and willing to participate. Given that our recruitment methods were based on random in-person approaches by undergraduate researchers, recruitment may have been further limited by nonconscious researcher choices (e.g., only approaching patients who displayed positive nonverbal body language). Moreover, only a small sample of the participants initially recruited responded to the follow-up survey, possibly introducing further sampling bias. Therefore, one should take care not to overgeneralize these findings. In order to account for this limitation in further studies, researchers may consider restructuring the study incentives. Similarly, future researchers should collect samples at multiple locations that represent multiple populations in order to generalize to the largest group of patients.

Despite these limitations, our findings highlight some opportunities to improve patient experiences. No formal policy currently exists for delivering medical test results, leaving doctors responsible for judging the best methods for their particular patients. Therefore, beyond their own preferences, doctors should carefully consider the influence of the chosen method in order to increase patient satisfaction. This attentiveness may increase adherence and reduce the possibility of furthering health conditions that may be

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associated with bad patient experiences. We hope these findings start a conversation among patients and healthcare professionals alike.

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Table 1

Demographic and Medical Test Characteristics of Sample

Demographic variable	<i>n</i> = 48
Gender	78% female
Age	40.02 (13.71)
Race/Ethnicity	
Latino(a)	72%
Caucasian (non-Latino)	24%
Black or African-American	4%
Education	
Did not complete high school	53%
Completed high school only	17%
Completed some college (no degree)	23%
Completed college (2 or 4 year)	6%
Employment	
Employed	37%
Unemployed	63%
Parental status	
Have at least one child	68%
Marital status	
Married	51%
Insurance	
Have some kind of insurance	89%
Health literacy (“I am confident filling out medical forms by myself”; 1= <i>strongly disagree</i> , 7 = <i>strongly agree</i>)	5.98 (1.56)
Types of medical test	
X-rays and other scans	44%
Blood work	23%
Pap tests	8%
Mammograms	6%
Biopsies	4%
Other (colorectal screening, eye exam, genetic test)	15%

OUTCOME FEEDBACK

Table 2

Means and Standard Deviations of Waiting Experience Variables by Delivery Method

	Appointment	Mail	Phone	F
State Anxiety	2.75 (.63)	2.64 (1.05)	2.50 (.88)	.18
Positive Affect	2.88 (.44)	3.38 (.88)	3.36 (.87)	.80
Negative Affect	2.43 (.57)	2.00 (0.00)	2.23 (1.00)	.22
Rumination	3.50 (1.55)	3.47 (1.33)	4.02 (1.76)	.26
Satisfaction with care	4.05 (1.74)	3.73 (1.42)	5.61 (1.41)	3.18
Outcome predictions	57.93 (30.78)	72.50 (45.55)	56.92 (31.53)	.39