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## **Should You Order the Feedback Sandwich? Efficacy of Feedback Sequence and Timing**

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*This study sought to investigate the efficacy of feedback sequence—namely, the feedback sandwich—and timing on performance. Undergraduate participants performed simulated office tasks, each associated with a feedback sequence (positive–corrective–positive, positive–positive–corrective, corrective–positive–positive, and no feedback), presented in a counterbalanced fashion. Half of the participants received individual verbal feedback delivered privately by the researcher immediately after each session, and the remaining participants received the same type of feedback immediately before each session. The aggregate data suggested no feedback was the most efficacious for participants who experienced feedback prior to performance, and the corrective–positive–positive sequence was the most efficacious for participants who received feedback following performance. Differences in feedback timing were not significant except for the no feedback condition. These results document that the feedback sandwich was not the most efficacious sequence, despite claims to the contrary.*

**KEYWORDS** *criticism sandwich, feedback sandwich, feedback sequence, feedback timing*

A feature of feedback neglected in classification systems and literature reviews is *feedback sequencing*, which refers to the order of delivery of positive and corrective feedback messages. Although particular sequences are promoted as more effective than other sequences, high-quality experimental research is lacking. Previous research on feedback sequence focuses primarily on factors *related to* employee performance but does not *directly*

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measure employee performance (e.g., Davies & Jacobs, 1985; Stone, Gueutal, & McIntosh, 1984). For example, Davies and Jacobs (1985) asked participants to rate the extent to which four feedback sequences were credible and desirable and whether they experienced a strong or weak emotional reaction to the feedback. Although this study and others (e.g., Stone et al., 1984) varied the sequence of feedback, the researchers failed to measure the effects of the different sequences on *observable* performance.

It is important to evaluate experimentally the effects of feedback sequence on observable and measurable performance because the feedback sandwich—a method advocating a particular sequence of feedback statements—is commonly recommended (e.g., Kimball & Jazzar, 2011). The feedback sandwich involves delivering feedback in a particular order: a positive statement about specific behaviors the individual performed well, a corrective statement about behaviors the individual could change or improve, and an overall positive statement (e.g., James & Shephard, 2001). Although the feedback sandwich may have some face validity, empirical or experimental evidence supporting the use of this method is lacking. Despite this, the feedback sandwich has been recommended and adopted in a wide range of settings and professions (e.g., among physicians, nurses, coaches, educators, and managers; Dohrenwend, 2002; Glover, 2000; Hanson, n.d.; Kimball & Jazzar, 2011). *Time Business & Money* published a small business tip of the day in November 2012 endorsing the feedback sandwich because it sends the message to employees that managers recognize their value (Shread, 2012). Proponents of the feedback sandwich argue that this method is more effective and preferred than other types of feedback because it makes corrective feedback more acceptable to the receiver and reduces discomfort and anxiety for the recipient and deliverer (Berger, 2013; Schwarz, 2013).

Although the proposed benefits of the feedback sandwich have led to its popularity, recent skepticism about the feedback sandwich has increased. Less than 6 months after publishing the small business tip of the day in support of the feedback sandwich, *Time Business & Money* argued the contrary (Harvard Business Review, 2013). Opponents of the feedback sandwich claim it obscures the message or devalues the corrective feedback because employees receive more positive statements overall than negative statements (Daniels, 2009; Heathfield, n.d.; Oestreicher, 2013). Others argue that the method devalues positive feedback through its pairing with corrective feedback, or employees eventually learn the sequence and do not attend to the first positive statements because they are waiting for the corrective statement (Daniels, 2009; Petty, 2009). Unfortunately, there is little evidence to support or invalidate the effectiveness of the feedback sandwich.

From a behavioral perspective, there may be benefits and disadvantages to the feedback sandwich. In light of recent research demonstrating

that a combination of praise and specific information about performance is more effective than either presented alone (e.g., Johnson, 2013), the feedback sandwich may be an effective method for improving performance. It contains information about behavior the individual is performing well, information about ways behavior can improve, and a praise statement. It is also possible that the first positive statement could function as a conditioned aversive stimulus because it is paired with and signals the corrective statement (an aversive stimulus), thereby reducing the potential beneficial effects of the initial positive statement on performance.

Another neglected feature of feedback is *feedback timing*, which refers to the delivery of feedback with respect to when performance occurred. Feedback can be delivered before performance—sometimes referred to as *feedforward*—or after performance (Hickman & Geller, 2003). Often published research does not clearly describe this information. In the only such study to date, Bechtel, McGee, Huitema, and Dickinson (2015) evaluated the effects of feedback timing on the performance of a data entry task and showed no statistical differences as a function of feedback timing. Thus, additional research is warranted to better understand the effects of feedback timing on performance.

Given the lack of methodologically rigorous studies and endorsements of the feedback sandwich, it is important to evaluate experimentally this method of feedback delivery. Arguments presented by proponents and opponents of the feedback sandwich are based on opinion rather than data. An evaluation of the effects of feedback timing is also necessary given the limited research. Thus, the purpose of the current study is to evaluate the efficacy of the sequence and timing of feedback (including the sandwich method) on performance.

## METHOD

The present study adopted a multi-element design. During the experimental manipulation, we assigned simulated office tasks (see below) to a feedback condition to minimize carryover effects of the various feedback sequences which we counterbalanced across participants. Each feedback sequence was associated with a different task for each participant. The order of tasks was also pseudo-randomized and determined by a random number generator in blocks of four sessions. We conducted eight to 10 sessions during each visit to the laboratory, which were scheduled 2 to 3 days per week. A session lasted 5 min and involved the completion of one of the simulated office tasks.

## Participants and Setting

Participants were eight undergraduate students (7 females, 1 male) enrolled in an introductory behavioral science course at a midwestern university who received extra credit for participation. The experimenter was a graduate teaching assistant for six of the eight participants. Participants' ranged in age from 18 to 43 ( $M = 23$ ). Experimental sessions took place in a research room ( $2.21 \times 2.03 \times 2.44$  m) containing a table, a chair, experimental materials, and one bin located on the center-right of the table for completed products. A one-way mirror separated the research room from an observation room of the same dimensions.

## Materials

Participants completed four simulated office tasks: folding brochures, stuffing envelopes, collating packets, and filing timesheets. For the folding task, the experimenter instructed participants to fold brochures in half and place each one in the completion bin located on the table. The materials for stuffing envelopes included two flyers announcing a community event and a box of 500 envelopes. The experimenter instructed participants to place one of each flyer in an envelope and place the unsealed envelope in the completion bin. Materials for the third simulated office task, collating packets, included seven pages of a training manual. The experimenter positioned stacks of each page in two horizontal rows centered in front of the participant (four stacks on the top row, three on the bottom) and a stapler in the bottom-right open space. The experimenter instructed participants to gather one page from each stack, staple the packet in the corner, and place the packet in the completion bin. For the remaining task, we created 120 timesheets (four timesheets for 30 employees). The timesheets were pseudo-randomized and placed on the table aside a mobile bin containing 30 hanging files, one for each employee. We grouped files alphabetically by first name. The experimenter instructed participants to identify the name on the timesheet and file the timesheet in the corresponding folder.

## Procedure

The three sequences of feedback included (a) the feedback sandwich, or the delivery of a positive statement followed by a corrective statement and another positive statement (PCP); (b) a positive–positive–corrective (PPC) sequence; and (c) a corrective–positive–positive (CPP) sequence. We selected these sequences to hold the ratio of positive to corrective statements constant and only vary the delivery sequence.<sup>1</sup> We also evaluated the effects of no feedback as a control condition. Four participants received feedback about their prior performance immediately before completing the

next session of the same task (i.e., pre-session feedback). The remaining four participants received feedback immediately after the completion of each session (i.e., post-session feedback).

#### BASELINE

On arriving for the first session, participants provided informed consent and demographic information. We asked them to refrain from using their mobile devices during sessions. The experimenter presented the materials on the tabletop, provided instructions about how to perform each task, and asked participants to complete the task. During each session, the experimenter observed the participant through a one-way mirror. After 5 min, the experimenter knocked on the window to prompt the participant to stop performing the task, entered the research room, gathered the session materials, and began the next session. Participants did not receive feedback for any of the tasks. Baseline continued until the participant completed each of the four tasks a minimum of three times and the rate of performance was stable.

#### EXPERIMENTAL MANIPULATION

Feedback sequences contained one specific positive statement (e.g., “I like how you kept the brochures in a neat pile”), one general positive statement (e.g., “You are doing a wonderful job”), and one specific corrective statement (e.g., “Next time, make sure that all of the timesheets are facing forward before filing them”). We defined specific feedback—both positive and corrective—as feedback that explicitly referenced information about observable behavior relevant to correct task performance. We defined the general positive statement as a social praise statement that did not provide information specific to task performance. The specific positive statement was always the first positive statement and the general positive statement was always the second positive statement presented in each sequence. This combination of feedback statements ensured consistency with the feedback sandwich definition (James & Shephard, 2001).

The experimenter did not deliver feedback about rate of performance. Instead, we provided feedback about the quality or accuracy of performance for several reasons. Because the main purpose of this study was to evaluate the sandwich method, it was important to remain consistent with definitions of the feedback sandwich found in the literature (e.g., James & Shephard, 2001). These definitions state that feedback contains information about *specific behaviors* the individual did well (positive) or could change or improve (corrective) and a general praise statement. Information about quantity or rate of performance does not clearly convey desirable or undesirable behaviors to participants. Moreover, participants may not necessarily perceive feedback about quantity or rate as positive or corrective. For example,

communicating to the participant “You folded eight brochures” may serve as a specific positive statement if it exceeds previous performance. The same feedback statement may be corrective if the participant’s prior performance exceeded eight brochures. Feedback of this sort would also vary across sessions and participants based on performance. Next, we were able to identify some qualitative aspect of performance requiring correction or worthy of praise because participants responded numerous times during a session. This allowed us to deliver only accurate feedback. Finally, a recent study documented that feedback regarding accuracy of performance resulted in increases in accuracy and speed, whereas feedback about speed resulted in a moderate increase in speed and decreases in accuracy (Tittelbach, Fields, & Alvero, 2008). These results suggest that feedback on quality may result in improvements in quality and rate, which may be more ecologically valid given the importance of both measures to organizations.

### Dependent Variable and Response Measurement

To evaluate feedback efficacy, we calculated the percent change in rate from baseline to the experimental manipulation (see Tittelbach et al., 2008). Percent change was computed after a series of calculations. First we obtained a rate/min by dividing the total number of permanent products by five (the session length in minutes). Next we obtained the mean rate of stable baseline performance for each task by summing the observed rate of performance for the last three baseline sessions and dividing by 3. We then subtracted the mean baseline rate/min from the observed rate/min during the experimental manipulation, divided this difference by the mean baseline rate/min, and multiplied by 100. The mean percent change during the last three sessions in the experimental manipulation for each feedback sequence condition was calculated by summing the observed percent change for each session for that condition and dividing by 3.

### Interobserver Agreement (IOA) and Procedural Fidelity

An independent second observer recorded data on performance (e.g., the number of folded brochures) for 73% of sessions to calculate IOA. IOA was calculated by dividing the lower frequency by the higher frequency and multiplying by 100 to yield a percentage. IOA averaged 99% (range = 99%–100%). An independent second observer also recorded data on the experimenter’s implementation of the procedures during a minimum of 38% of the sessions. To measure procedural fidelity, the observer completed a task analysis of the experimenter’s activities during the sessions. Procedural fidelity was calculated by dividing the number of correctly implemented steps by the total number of steps in the procedure and multiplying by 100. Procedural fidelity averaged 99% (range = 91%–100%).



## RESULTS

Figures 1 and 2 depict data for the participants receiving pre- and postsession feedback, respectively. Both figures depict the percent change in rate during the experimental manipulation for each participant. A 0% change represents performance equal to the mean rate for the last three data points during baseline, indicated by the dotted horizontal line on all graphs. Data points above the dotted horizontal line represent an increase in performance, and data points below represent a decrease in performance from the mean baseline rate.

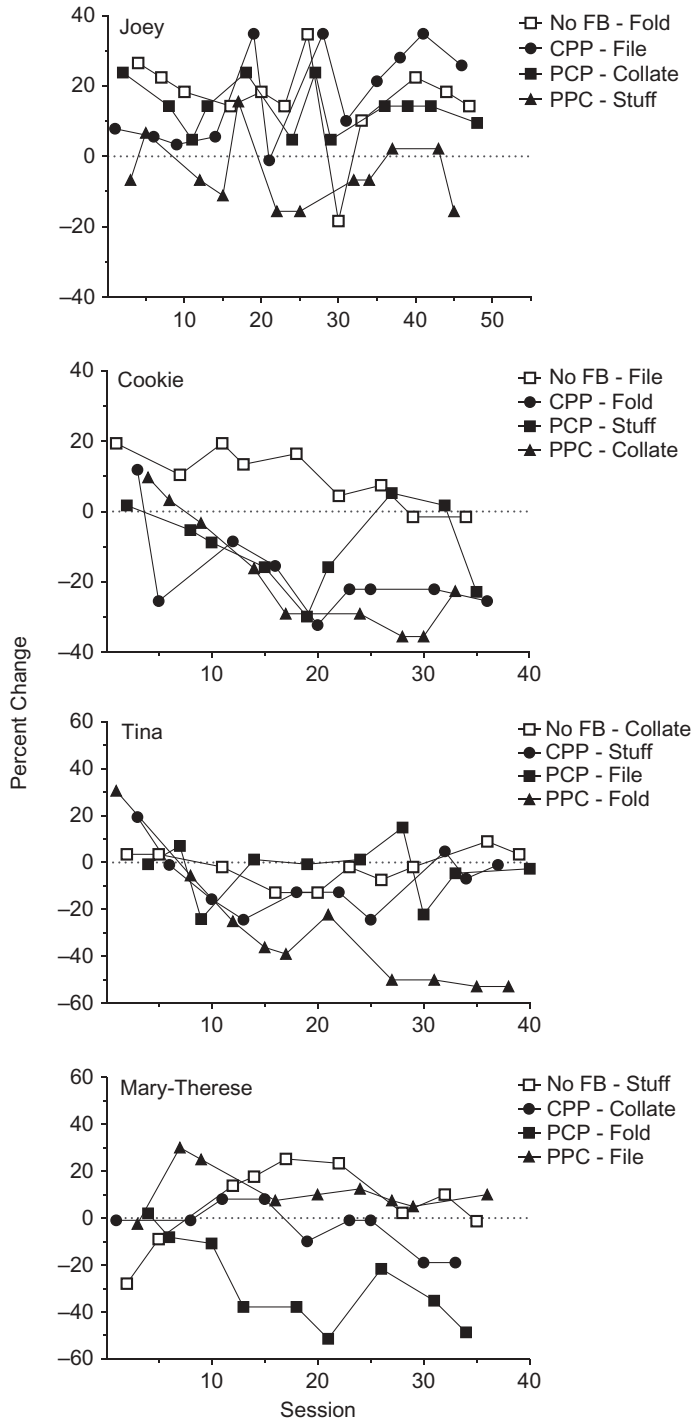
## Presession Feedback

Joey, Cookie, Tina, and Mary-Therese received presession feedback (see Figure 1). Overall, for Joey, the CPP condition resulted in the greatest increase in percent change ( $M = 29.59$ ). Relative to the other conditions, the PPC sequence was the least efficacious, resulting in the largest decrease in percent change ( $M = -3.71$ ). Mean performance during the feedback sandwich (PCP) condition was slightly higher than the baseline mean ( $M = 12.70$ ), but overall was lower than the no feedback condition. For Cookie, all conditions were at or below the mean baseline rate by the end of the study. However, relative to the other conditions the no feedback condition was the most efficacious ( $M = 1.49$ ) and the PPC condition was the least efficacious ( $M = -31.18$ ). Performance in the feedback sandwich (PCP) condition was generally below the mean baseline rate ( $M = -5.27$ ). Overall, for Tina, the no feedback condition was the most efficacious ( $M = 3.54$ ) and the PPC sequence was the least efficacious ( $M = -51.85$ ). Performance in the PCP condition was variable but generally remained near the baseline mean ( $M = -9.77$ ). For Mary-Therese, the PPC sequence was the most efficacious ( $M = 7.50$ ) and the PCP sequence was the least efficacious ( $M = -35.14$ ).

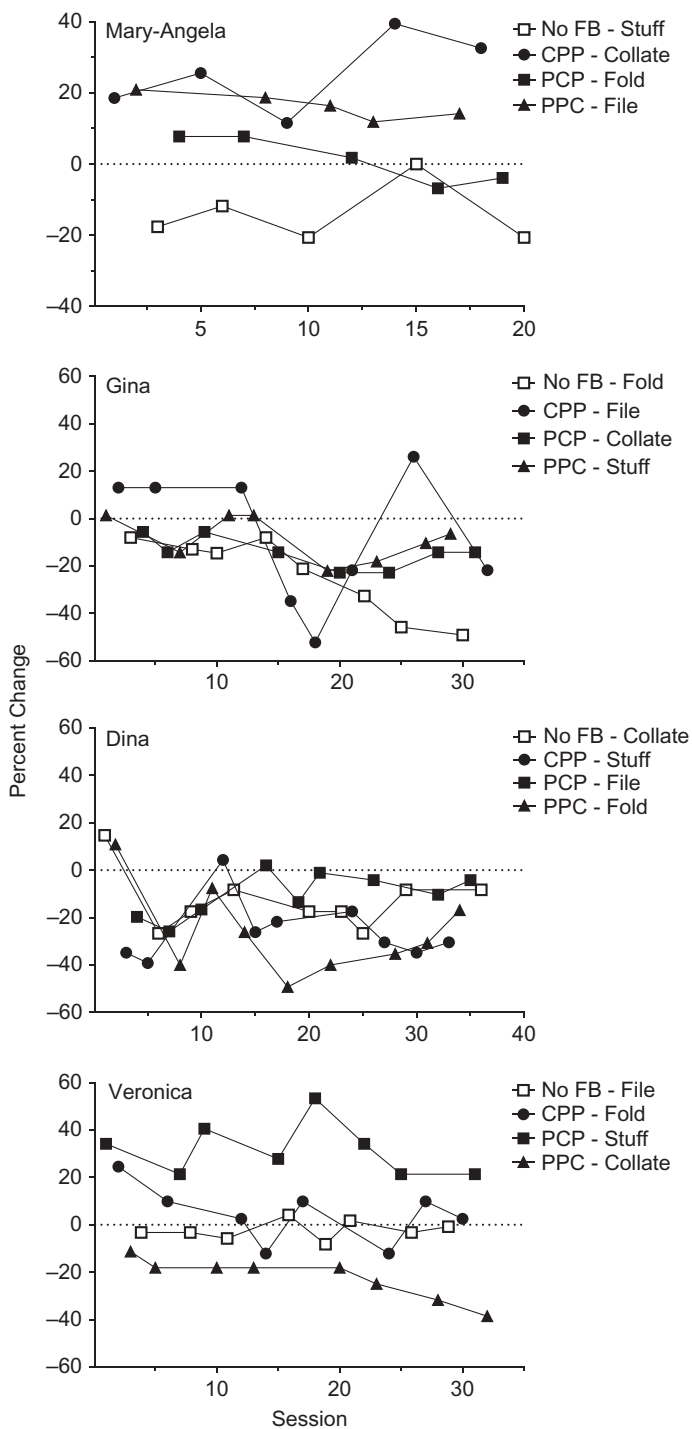
The top portion of Table 1 depicts the mean percent change in rate for the last three sessions by feedback sequence for participants receiving presession feedback. The no feedback condition resulted in the highest number of participants with improvements ( $n = 2$ ) and the highest aggregated mean across participants. The PPC condition resulted in the highest number of participants with *decreases* in percent change ( $n = 3$ ) and the lowest aggregated mean across participants. Overall, the no feedback condition was the most efficacious ( $M = 6.77$ ), followed by CPP ( $M = -1.87$ ), PCP ( $M = -9.37$ ), and PPC ( $M = -19.81$ ).

## Postsession Feedback

Mary-Angela, Gina, Dina, and Veronica received postsession feedback (see Figure 2). Overall, for Mary-Angela, CPP was the most efficacious sequence ( $M = 27.90$ ) and the no feedback condition was the least



**FIGURE 1** Percent change in performance for participants experiencing pre-session feedback. FB = feedback; CPP = corrective-positive-positive; PCP = positive-corrective-positive; PPC = positive-positive-corrective.



**FIGURE 2** Percent change in performance for participants experiencing postsession feedback. FB = feedback; CPP = corrective-positive-positive; PCP = positive-corrective-positive; PPC = positive-positive-corrective.

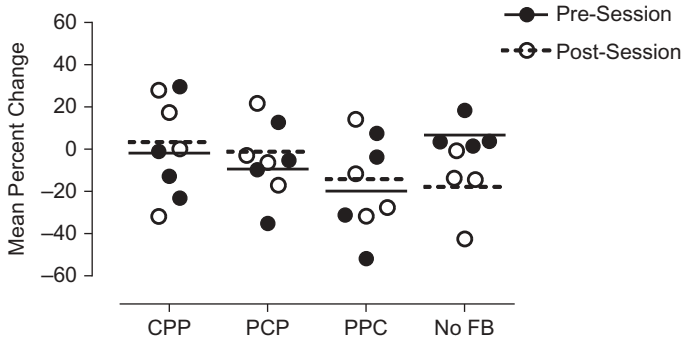
**TABLE 1** Mean Percent Change in Rate by Feedback Sequence Condition for the Last Three Data Points of Pre- and Postsession Feedback

Participant	PCP	CPP	PPC	No feedback
Presession feedback				
Joey	12.70	29.59*	-3.71**	18.37
Cookie	-5.27	-23.16	-31.18**	1.49*
Tina	-9.77	-1.02	-51.85**	3.54*
Mary-Therese	-35.14**	-12.88	7.50*	3.67
<i>M</i>	-9.37	-1.87	-19.81**	6.77*
Postsession feedback				
Mary-Angela	-2.97	27.90*	14.17	-13.73**
Gina	-17.02	17.39*	-11.63	-42.48**
Dina	-6.23*	-31.88**	-27.64	-14.38
Veronica	21.67*	0.15	-31.74**	-0.74
<i>M</i>	-1.14	3.39*	-14.21	-17.83**

*Note.* A single asterisk denotes performance with the highest percent change. A double asterisk denotes performance with the lowest percent change. PCP = positive-corrective-positive; CPP = corrective-positive-positive; PPC = positive-positive-corrective.

efficacious ( $M = -13.73$ ). Performance during the PCP condition approximated the mean baseline rate, though there was a slight increase at the start of this phase ( $M = -2.97$ ). Gina demonstrated a positive percent change in the CPP condition except during sessions in which she stopped performing the filing task (Sessions 16, 18, 21, and 32). Instead of filing, she alphabetized the file folders, which she was never instructed to do. As a result, her performance during those sessions shows a negative percent change. Because these sessions do not depict actual performance on the task, these data points were excluded from the analysis. Overall, during the sessions in which Gina performed the filing task, the CPP condition was the most efficacious ( $M = 17.39$ ) and the no feedback condition was the least efficacious ( $M = -42.48$ ). Performance during the PCP condition was generally stable and below the mean baseline rate ( $M = -17.02$ ). For Dina, all of the feedback sequences reduced performance relative to baseline; however, the PCP sequence was the most efficacious ( $M = -6.23$ ) relative to the other conditions and the CPP sequence resulted in the greatest decrease in percent change ( $M = -31.88$ ). Overall, for Veronica, the PCP sequence was the most efficacious ( $M = 21.67$ ) and the PPC sequence was the least efficacious ( $M = -31.74$ ).

The bottom portion of Table 1 depicts the mean percent change in rate for the last three sessions by feedback sequence for participants receiving postsession feedback. The CPP ( $n = 2$ ) and PCP ( $n = 2$ ) conditions were the most efficacious. However, the CPP sequence resulted in the highest aggregated mean across participants. The no feedback condition resulted in the highest number of participants with decreases ( $n = 2$ ) and the lowest aggregated mean across all participants. Overall, the CPP condition was



**FIGURE 3** Mean percent change of last three data points for pre- and postsession feedback groups by feedback sequence condition. Horizontal lines depict the aggregate mean. CPP = corrective–positive–positive; PCP = positive–corrective–positive; PPC = positive–positive–corrective; FB = feedback.

the most efficacious ( $M = 3.39$ ), followed by the PCP ( $M = -1.14$ ), PPC ( $M = -14.21$ ), and the no feedback ( $M = -17.83$ ) conditions.

Figure 3 depicts the means of the last three data points for each participant, grouped by feedback timing and sequence, and the aggregate mean for each feedback timing and sequence combination. On average, performance for participants receiving postsession feedback was slightly higher than performance for participants receiving presession feedback for the CPP, PCP, and PPC conditions. To determine whether these differences were statistically significant, we conducted a nonparametric  $t$  test. The Mann–Whitney test showed that the differences in feedback timing were not significant for any of the feedback sequences (CPP:  $U = 62$ ,  $p = .58$ ; PCP:  $U = 59$ ,  $p = .47$ ; PPC:  $U = 59$ ,  $p = .47$ ). Although feedback about performance was not delivered during the no feedback condition, participant performance in the no feedback condition was higher on average for participants assigned to the presession feedback condition than the postsession condition. This difference was statistically significant ( $U = 12$ ,  $p = .0002$ ).

## DISCUSSION

The purpose of this study was to evaluate the efficacy of feedback sequence—in particular the feedback sandwich method—and the influence of the timing of feedback delivery. Overall, the findings suggest that the sequence of feedback statements and their timing influence performance, but the effects may be idiosyncratic across participants at the individual level. However, interesting findings emerge when we compare aggregate performance. For participants who experienced presession feedback, the no feedback condition was the most efficacious and the PPC sequence was the least efficacious. For participants who received postsession feedback,

the CPP sequence was the most efficacious and the no feedback condition was the least efficacious. Although the most and least efficacious feedback sequences differed for the pre- and postsession feedback conditions when we considered all conditions, there were no statistically significant differences in performance based on feedback timing *within* a particular feedback sequence, except for the no feedback condition.

It is interesting that the no feedback condition produced statistically significantly higher performance during pre-session feedback compared to postsession feedback. When comparing *only* the conditions during which the experimenter actually provided feedback, we found that the CPP and PPC sequences were the most and least efficacious, respectively, for both the pre- and postsession feedback groups. Thus, the timing of feedback does not appear to influence performance (similar to Bechtel et al., 2015) unless one ranks the efficacy of performance across feedback sequences that involve a no feedback condition.

The present study contributes to the feedback literature in several ways. Most important, the present study measured the effects of feedback sequence on observable and measurable behavior rather than hypothetical constructs (e.g., emotional reaction, desirability; Davies & Jacobs, 1985). Next, our findings support the argument that the feedback sandwich method is not the most efficacious method for delivering feedback. It is important to note that the feedback sandwich is not the only sequence recommended in practice (e.g., Reid & Parsons, 2006). For example, in his book on academic mentoring, Zachary (2012) recommended that mentors provide feedback in the form of positive–positive–positive–corrective. Although the sequence proposed by Zachary contains four feedback statements (whereas this study evaluated three statements), the present results suggest that ending feedback with a corrective statement produces decreases in performance, on average.

Given literature reviews demonstrating the differential effectiveness of feedback characteristics (e.g., Alvero, Bucklin, & Austin, 2001), the present results suggest that the sequence and timing of feedback may be important characteristics that warrant inclusion in future reviews. Researchers do not consistently describe these variables in publications. Thus, we encourage researchers to describe clearly the timing and sequence of feedback in their manuscripts.

An interesting finding warrants further evaluation. When comparing *only* the conditions during which the experimenter actually provided feedback, we found that the CPP condition produced the highest aggregated mean, followed by the PCP condition and finally the PPC condition (CPP > PCP > PPC). Thus, it appears that the more information presented before the corrective statement, the less efficacious the feedback. Research has shown that organisms differentially attend to stimuli present in the environment (e.g., Reynolds, 1961); when presented as a compound the control of responding by each stimulus is influenced by several factors, including the history of reinforcement and salience of all stimuli in the compound (Fantino &

Logan, 1979). Perhaps participants attended differentially to the *first* component of the feedback sequence compound. We presume that if the corrective statement was the most efficacious component, participants who attended to this particular component (i.e., the CPP sequence) would have shown the most gains in performance. Because these findings are preliminary, this interpretation warrants additional investigation.

Our study did not include a condition containing only positive (i.e., positive–positive–positive) or only corrective (i.e., corrective–corrective–corrective) feedback. It may be the case that receiving any combination of positive and corrective feedback lowers performance relative to positive or corrective feedback only, which would support the claim that one should not pair criticism with praise (Daniels, 2009). Future research could pursue this line of inquiry.

Despite the strengths and contributions of this study, several limitations exist. Feedback included information regarding quality of performance rather than rate, and, as a result, feedback could have produced a lower rate if participants slowed responding to produce a higher quality product. Although participants demonstrated rate decreases, performance also increased above the mean baseline rate. In these instances (e.g., the CPP sequence for Mary-Angela), both the rate and quality of performance improved, providing a stronger argument for the efficacy of the feedback sequences in which this was found. Moreover, these findings replicate previous research showing that feedback about quality produces increases in both quality and rate (e.g., Tittelbach et al., 2008). It is unclear whether the experiment would yield the same results if feedback included information regarding quantity or rate of performance. Future research may wish to address this topic. Information about rate may serve as positive or corrective feedback depending on prior performance; thus, an examination of feedback sequences must carefully consider how to address this issue. Future research may also wish to compare the differential effects of feedback sequences containing information about quality versus rate to better understand how these variables influence responding.

It is also possible that performance improvements were due to practice effects and decreases were due to fatigue or boredom. Although baseline response patterns do not suggest that either occurred, participants might have experienced fatigue or boredom the longer they remained in the study. Moreover, varying both the office task and type of feedback sequence may have introduced a serious confound. For example, participants completed the tasks at different rates during baseline; thus, we could attribute differences in performance to differences in completion rates by task. We used percent change as our dependent variable to attempt to address these differences. We also counterbalanced the tasks and sequences across participants. Despite these efforts, the design we adopted may not have addressed this potential confound.

We conducted the present study in a simulated work environment in a laboratory; thus, the generalizability of these findings to the organizational setting may be limited. As the body of literature on the sequence and timing of feedback grows, future research might focus on analog research that more closely resembles a true organizational setting. It was also impossible to tie performance to real-world differential outcomes, such as raises and promotions. Future research could address this limitation. On a related note, the experimenter and participants did not have a history of a supervisor–supervisee relationship wherein supervisor praise functions as a powerful reinforcer. This arrangement was not possible given the experimental preparation. However, the experimenter’s status as a graduate teaching assistant for the majority of participants may have influenced the efficacy of the positive statement in a similar way.

### ACKNOWLEDGMENTS

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### NOTE

1. Specific feedback statements are available from the first author on request.

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