Similar but different: an analysis of differences in clarinet and saxophone pedagogy and doubler’s misconceptions

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SIMILAR BUT DIFFERENT: AN ANALYSIS OF DIFFERENCES IN CLARINET AND SAXOPHONE PEDAGOGY AND DOUBLER’S MISCONCEPTIONS

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of the Requirements for the Designation

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SIMILAR BUT DIFFERENT

This Study by: Nicholas Carlo

Entitled: Similar But Different: An Analysis of Differences in Clarinet and Saxophone Pedagogy and Doubler’s Misconceptions

has been approved as meeting the thesis or project requirement for the Designation University Honors

Date _______ Dr. Kevin Droe, Honors Thesis Advisor

Date _______ Dr. Jessica Moon, Director, University Honors Program
**Introduction**

Doubling, or the ability to play one or more secondary instruments, is an extremely important skill for the professional woodwind player to have. For a saxophonist, the ability to play clarinet can sometimes make the difference between winning an audition or not. On a more basic level, many clarinetists learn to play saxophone so they can participate in the school jazz band, while many saxophonists learn to play clarinet both as a double in jazz band or as a new challenge in the concert band setting. Many times a student will pick up an instrument and attempt to figure it out on their own, and are able to get by using a subpar embouchure without ever learning the way to improve their sound or ability. Knowing typical misconceptions and problems in advance can help new students learn to perform better on their secondary instrument as soon as they learn to play, and can help teachers with identifying common mistakes to look out for. Unfortunately, research documenting the differences between clarinet and saxophone and problems experienced by doublers is lacking. Most available sources on doubling simply describe its usefulness from a performance perspective, rather than describing ways to teach doubling or common issues with musicians playing both instruments. The purpose of this thesis is to examine the tendencies and misconceptions of clarinetists and saxophonists when playing a clarinet or a saxophone as a secondary instrument.

**Literature Review**

This literature review covers three topic areas: saxophone pedagogy, clarinet pedagogy, and woodwind doubling. The sections on pedagogy focus specifically on instrument position, breathing, embouchure, tongue position, articulation, and use of the larynx and throat, which when compared reveal many of the similarities and differences between saxophone and clarinet. By understanding and comparing the basic pedagogy for both instruments, further research can
be completed on the misconceptions in proper technique on both saxophone and clarinet when played as a secondary instrument.

**Saxophone Pedagogy**

The saxophone is a unique instrument in the fact that the majority of its weight is supported by a neck strap. In Larry Teal’s *The Art of Saxophone Playing* (1963), he wrote that the hands should only stabilize the instrument, while the neck strap supports the weight. He described the proper playing position generally as whatever is most comfortable, which can vary depending on the size of the musician. Regardless of size, the arms should be comfortable while the head remains erect and the back is straight. The mouthpiece should enter the mouth at about a 45 degree angle, and the neck strap should be positioned so the mouthpiece lines up at that angle without any extra contortion or tension from the musician.

The use of the breath on any wind instrument is irregular in comparison to the typical breath. An efficient supply of air requires filling up the lungs to full capacity, which is unusual for the average resting breath. Both Liebman (1989, 2006) and Teal (1963) described inhaling in similar manners. The breath should be low, filling up the stomach first. As the stomach fills, the waistline expands and pushes out the bottom half of the torso, followed by the expansion of the chest cavity as the lungs fill with air. The shoulders may rise slightly, but a big shift in the shoulders indicates a high breath, which is incorrect. Filling the stomach first utilizes the abdominal and diaphragmatic muscles, which creates a pressure change and allows the lungs to fill up to their entirety. When exhaling, the abdominal muscles contract and push in and up to create a steady and consistent air stream, which is necessary for a steady and consistent sound on the instrument. Contracting the stomach muscles also serves to empty the lungs of air completely, allowing full capitalization on the capacity of the lungs.
Embouchure is a French word used to describe the use of the facial muscles, teeth, and lips to produce sound on a wind instrument. In regard to saxophone embouchure, Teal (1963) suggested that, “The lips should circle the mouthpiece with an equal pressure toward the center, much the same as an elastic band” (p. 41). To begin, the mouthpiece needs to be in the center of the mouth so that the player can exert equal pressure on it and fully utilize his or her muscles. The upper teeth rest approximately one half inch from the tip, depending on the type of saxophone, and should simply rest directly on the mouthpiece with the natural weight of the head. Liebman (1989, 2006) suggested keeping the teeth in a natural bite position, although without actually biting down onto the mouthpiece. The upper lip rests on top of the mouthpiece and over the top teeth. There should be little to no pressure coming from the upper lip, instead just resting over the top teeth while sealing the embouchure. The lower lip rolls over the bottom teeth, creating a platform for the reed and mouthpiece to rest upon. The pressure from the lower teeth should equal the downward pressure from the upper teeth (Liebman, 1989, 2006). Both the bottom and top teeth should exert very little pressure on the mouthpiece, simply holding it in place rather than biting it. The pressure should instead come from the corners of the mouth and the lower lip. To achieve this, the chin muscles should pull down, which allows the lower lip muscles to push up while the corners of the mouth can push in, each exerting equal pressure on the mouthpiece while allowing the reed to vibrate. In addition to this, the lips should be in direct alignment with each other (Teal, 1963). The cheeks should also stay in their normal resting position. This may require some muscle control to prevent them from puffing out, which creates an inefficient use of air and ruins the embouchure.

The position of the back of the tongue modifies the shape of the oral cavity, directly effecting the air stream as it passes from the lungs into the instrument. Liebman (1989, 2006)
described multiple positions for the back of the tongue, but identified the “EE” position as most effective. This position resides in the approximate middle of the mouth, best visualized as saying “EE” as in “eat.” In this position, the sides of the tongue should rest up against the back molars. This position creates a narrow passage for the air to pass through, maximizing its velocity while simultaneously narrowing the mouth to prevent the air from dispersing into a column too wide for effective sound. Having the tongue in the extreme low or high positions creates tension in the larynx and throat, and also allows the air to disperse.

Both Liebman (1989, 2006) and Teal (1963) identified three different regions of the tongue to use for articulation on the saxophone. These are the tip of the tongue, slightly back from the tip of the tongue, and the midsection of the tongue, which is achieved by anchoring the tip of the tongue against the lower teeth and bending the tongue upward (also called anchor tonguing). Each of these methods serve a specific articulation purpose. Teal (1963) described each region in relation to the size of the tongue and mouth: the tip of the tongue for a large oral cavity and short tongue, anchor tonguing for a small oral cavity and large tongue, and slightly back of the tip for a size somewhere in the middle. For each of these, Teal (1963) advocated for the tongue striking the reed at the tip. Liebman (1989, 2006) on the other hand labeled each region based on the sound that it creates. The tip creates a lighter sound, anchor tonguing creates a heavier sound, and slightly back from the tip is a more medium sound. He also described three areas of the reed that the tongue can hit: the first sixteenth of an inch from the tip, the first fourth inch, and the first half inch, each creating a progressively heavier sound. Liebman (1989, 2006) advised experimenting with using different combinations of tongue and reed placement to create a palate of tone colors and note lengths.
Liebman (1989, 2006) also described the use of the larynx in good tone production. This begins with keeping the head in a natural position, as if looking straight ahead, which keeps the throat and larynx free of tension. The manipulation of the larynx is mostly subconscious, but it can be practiced by practicing the overtone series on the horn from the lowest notes. To create the overtones, the saxophonist must manipulate the larynx and vocal cords to allow the overtones to speak. Keeping that manipulation in place while playing the fingered pitch that matches the overtone creates richer timbres in the sound and an overall better tone quality. This manipulation of the larynx relies on a relaxed and open throat and practice with identifying the proper motion of the larynx for different notes and ranges of the instrument.

**Clarinet Pedagogy**

The angle of the clarinet is more acute than the saxophone and other woodwinds, closer to 35 degrees (Ridenour, 2002). The specific angle is dependent on the student’s facial structure, and can be found by starting at a 60 degree angle with the head forward and maintaining a pitch while bringing the clarinet in closer, until the most resonant sound is heard. It is important that the clarinet is brought up to the head, so that the head can stay up and level (Stein, 1958). Part of this angle comes from the way the lips and teeth interact with the mouthpiece. For clarinet, the lower teeth and lip are about one-fourth to three-eighths of an inch more advanced on the mouthpiece than the upper lip, although the teeth are vertically even with each other (Stein, 1958). The angle of the clarinet creates this difference in location. If the clarinet angle were more horizontal than vertical, the lips would contact the mouthpiece in roughly the same location, but by bringing the clarinet closer to the body in a more vertical position, the lower lip ends up farther down the mouthpiece, allowing the reed more freedom to vibrate.
Inhalation on clarinet is the same as on saxophone, and for almost all wind instruments, where the stomach is filled first followed by the chest. Although the exhalation method of contracting the stomach described previously for saxophone also works for clarinet, Ridenour (2002) identified a more effective method for breath support on clarinet that he calls the compression method. The compression method keeps the diaphragm fully depressed, with no contraction inward. The pressure comes instead from pushing the diaphragm down and out against the abdominal muscles. This opposite motion compresses the air and forces it to move faster and last longer as you expel the air than the traditional method of contraction.

The main purpose of the embouchure is to seal the connection between the body and the clarinet for the passage of air, and to cushion the reed so it can vibrate. Both Ridenour (2002) and Stein (1958) strongly advocated the view that pressure on the mouthpiece comes from the lips, not from the jaw. The jaw should be relaxed and open, stretching downward with the chin muscles to create what appears as a flat chin, rather than bunched. Any biting pressure from the jaw creates tension and a whole host of issues with tone production. While the jaw and chin muscles stretch down, the lower lip stretches up in contrasting motion, providing a support structure over the bottom teeth. The red portion of the lower lip should still be visible and should be positioned in front of the teeth, rather than over them (Ridenour, 2002). Too much lip past the teeth dampens the reed and reduces resonance of the instrument. The upper teeth should act only as a structural support, and should not bite down on the mouthpiece. The upper lip rests in front of the teeth and exerts a small amount of pressure from the corners, rather than the middle of the lip. Stein (1958) related the embouchure to a puckered smile, or like sucking in through a straw, which creates the proper pressure from the corners of the mouth and the opposite muscle
movement of the lower lip and chin muscles. Finally, the cheeks should stay in their natural position rather than puffing out from the air.

When playing clarinet, the throat should be open and relaxed. Stein (1958) described yawning with your mouth closed, while keeping your lips touching, as a method of opening up and creating space in the throat. The tongue should remain forward, rather than pulled back, which creates tension in the throat and blocks it off slightly. To create more resonance in the throat, the Adam’s apple should be lowered slightly (Ridenour, 2002). The mid-section of the tongue should be high and back, which narrows the space of the oral cavity and allows the air to speed through faster. Saying words like “key” and “kick,” or hissing like a cat, arches the tongue back and up into the right position (Ridenour, 2002). The front of the tongue should be as close to the tip of the reed as possible to minimize movement. When articulating, the tongue always needs to touch as close to the tip of the reed as possible. Both Stein (1958) and Ridenour (2002) noted that different sections of the tongue can be utilized depending on its size, but the most ideal spot is the tip of the tongue. Anchor tonguing can also be applied to clarinet, but only if the tongue is too long for using the tip, and only if there is still a very light touching to the reed.

**Doubling Differences**

Teal (1963) summarized several of the more obvious differences between clarinet and saxophone in his chapter on doubling. The term “doubling” describes the ability to play another secondary instrument, which is colloquially referred to as a double. Most obviously, the saxophone has a brass body with a woodwind mouthpiece and single reed, while the clarinet, traditionally, has a wooden body. The clarinet has a cylindrical bore while the saxophone is conical, meaning that the saxophone bore gradually tapers outward from neck to bell, growing larger like a cone, while the clarinet bore is the same size until it flares out at the bell. This, along
with mouthpiece differences, creates a more uniform resistance in the clarinet, while the resistance on saxophone varies depending on the range played in. Although Teal (1963) did not go into detail, he notes that the embouchures are different and not transferable, and that a serious doubler needs the ability to shift instantly between the two different embouchures. He also noted that the mouthpiece angle is roughly 45 degrees on saxophone, and roughly 30 degrees on clarinet, meaning that the clarinet comes in closer to the body. This angle, along with mouthpiece size and the amount of mouthpiece in the mouth, creates slight differences in tonguing as well.

**Research Methods**

The purpose of this thesis is to examine the tendencies and misconceptions of clarinetists and saxophonists when playing a clarinet or a saxophone as a secondary instrument. These tendencies can be identified by testing the musicians on their prior knowledge of the instruments and their pedagogy. The following research questions were asked:

1. What are the most frequent misconceptions saxophonists have about the clarinet and the clarinet embouchure?

2. What are the most frequent misconceptions clarinetists have about the saxophone and the saxophone embouchure?

To answer the research questions, a survey was conducted asking clarinet and saxophone students to describe what they believed to be the correct pedagogical techniques for both saxophone and clarinet. A quantitative approach was chosen where the musicians selected an answer on a scale that most aligned with the answer they believed was true. The goal for the survey was to identify groupings of answers demonstrating misconceptions about pedagogy on a secondary instrument. The research on pedagogy revealed that both clarinet and saxophone
utilize a flat chin rather than bunched, pressure from the corners of the mouth rather than the jaw, and an “EE” tongue position (Liebman, 1989, 2006; Ridenour, 2002). The most significant difference is the angle of the mouthpiece in relation to the face. This means that the biggest difference in embouchure comes from the positioning of the teeth and lips on the mouthpiece. For saxophone, they should be directly aligned with each other, which is reflected in the more perpendicular mouthpiece angle. For clarinet, the bottom teeth are slightly in front of the top teeth, which the more parallel mouthpiece angle assists with. With these conclusions, the following questions were devised:

1. On a scale of 1 to 7, approximately what angle should be formed between the mouthpiece and the face for saxophone? (1: As close to parallel as possible [0 degree angle]; 7: Perpendicular [90 degree angle])

2. On a scale of 1 to 7, where should the tongue be positioned vertically in the mouth for saxophone? (1: Low/bottom of mouth, as in “ahh”; 7: High/top of mouth, as in “ee”)

3. On a scale of 1 to 7, how much pressure should be exerted on the mouthpiece using the corners of the mouth for saxophone? (1: Minimal pressure [No use of muscles]; 7: Maximum pressure [full exertion of muscles])

4. On a scale of 1 to 7, what direction/position should the chin be in to create the saxophone embouchure? (1: Chin pulling down away from mouthpiece; 7: Chin pushing up into mouthpiece)

5. On a scale of 1 to 7, how much vertical pressure should be exerted on the mouthpiece using the jaw/teeth for saxophone? (1: Minimal pressure [teeth just rest lightly against mouthpiece]; 7: Maximum pressure [teeth bite/squeeze mouthpiece forcefully])
These questions are then repeated, replacing the word “saxophone” with “clarinet.” Participants in the survey were also asked for their primary instrument (clarinet or saxophone), secondary instrument if they have one, and how many years they have played both. The survey was conducted through Google Forms, and after receiving approval from the Institutional Review Board, the survey was sent via email to the clarinet and saxophone professors at the University of Northern Iowa, University of Iowa, Iowa State University, and Drake University to forward on to their studios. See Appendix A to view the survey and the consent notice.

Results

From the four universities surveyed, twenty individuals participated. Ten were clarinetists, five of whom had played saxophone before, and ten were saxophonists, three of whom had played clarinet before. One saxophonist chose not to answer the clarinet questions, and one clarinetist chose not to answer the saxophone questions. Appendix B includes the results of my survey, organized by primary instrument first and secondary instrument second (if applicable).

For the question asking participants to describe the angle of the saxophone mouthpiece to the face, research suggests that the correct answer is approximately 45 degrees, meaning that an answer of “4” would be most accurate. On average, saxophonists reported the angle of the saxophone mouthpiece to be 45 degrees (M=4.00, SD=1.94), although there was a wide variety of answers. The clarinetists (N=9) also had a wide range of responses to this question, but tended to report the saxophone angle as higher than the saxophonists did (M=4.89, SD=1.83). For the same question asking about the mouthpiece angle for clarinet rather than saxophone, research suggests the angle should be closer to 30 or 35 degrees, meaning an appropriate answer would be
The clarinetists had an average answer of 4.20 (SD=1.40), while the saxophonists had an average answer of 4.00 (SD=1.73).

Of the nine clarinetists who answered both questions, five responded that the clarinet angle should be more acute than the saxophone angle. Similarly, of the nine saxophonists who answered both questions, four responded that the clarinet angle should be more acute than the saxophone angle. Considering that only half of both groups indicated that the clarinet angle should be more acute than the saxophone angle, the data collected from these two questions is fairly inconclusive.

The next question asked participants about the position of the tongue vertically in the mouth. For saxophone, research suggests that the tongue should be high in the mouth like saying “ee,” meaning an answer of 6 or 7 would be most appropriate. The ten saxophonists had an average answer of 5.30 and a standard deviation of 2.26, indicating a tongue position just above the middle of the mouth rather than up high. The clarinetists had an average answer of 4.22 and a standard deviation of 1.48, indicating a tongue position in the middle of the mouth for saxophone. However, the four clarinetists who have not played saxophone had an average answer of 5.25, while the five who have played reported an average of 3.40. For the corresponding question about clarinet tongue position, the high “ee” tongue position is also correct, meaning an answer of 6 or 7 would again be most appropriate. The saxophonists on average selected a high tongue position for clarinet (M=6.56, SD=0.73), while all ten clarinetists who answered the question selected 7. Comparing individual answers, all but one of the clarinetists picked a lower number for saxophone than for clarinet. Considering that all five of the clarinets who have played saxophone selected either a 3 or 4 for saxophone, while selecting a 7 for clarinet, suggests that clarinetists who play saxophone typically believe that the saxophone
uses a low or neutral tongue position. The saxophonists had more variety in their response for the saxophone question, but they generally selected the same number or higher for clarinet. The saxophonists recognized that the clarinet should be played with a high tongue, even though some of them believe or are trained to play with a low tongue on saxophone. Figure 1 gives the average answers for each of the four groups and shows visually the conceived differences in tongue position between clarinet and saxophone. The x axis shows the four groups surveyed: all clarinets, clarinets who double on saxophone, all saxophonists, and saxophonists who double on clarinet. The y axis shows the average response to the questions. The blue bars show the answers for the saxophone tongue while the green bars show the answers for the clarinet tongue.

*Figure 1.* Relationship of saxophone and clarinet vertical tongue position responses by research group.

Figure 1 shows that for three of the four groups surveyed, a lower tongue position was selected for saxophone than for clarinet. This difference is most severe among clarinetists who have played saxophone, showing a misconception about the position of the tongue in the saxophone embouchure.
In the clarinet and saxophone questions asking about pressure from the corners of the mouth on the mouthpiece, an answer of 1 indicates minimal pressure (no use of the muscles) while 7 indicates maximum pressure (full exertion of muscles). Both the clarinet and saxophone require the use of the corner muscles to create an efficient embouchure, suggesting an appropriate answer of 4 or more to both questions. The average answer from the saxophonists was 4.8 for saxophone (SD=0.79) and 5.00 for clarinet (SD=1.00), both indicating pressure from the corners slightly more than halfway between no pressure and full exertion. The average response from the clarinetists was 4.33 for saxophone (SD=1.58) and 6.20 for clarinet (SD=0.63), indicating similar responses to the saxophonists but with close to full exertion of muscles for clarinet. The clarinetists who have played saxophone before had an average answer of 3.80 for saxophone and 6.00 for clarinet. Responses suggest that both clarinetists and saxophonists believe that the saxophone requires a more relaxed embouchure than the clarinet.

Figure 2 compares the individual answers from the nine clarinetists who answered both questions, showing their selection of corner pressure for both saxophone and clarinet. Each individual is labeled as CL on the x axis, with average responses given on the y axis.

*Figure 2.* Answers of individual clarinetists about corner muscle pressure on both saxophone and clarinet
Figure 2 shows that only three of the nine clarinetists who answered both questions selected the same answer for both clarinet and saxophone. The other six all selected a lower number for saxophone than for clarinet, and five of those had a difference of two or more. These differences indicate a belief among clarinetists that the saxophone requires less pressure from the corners of the mouth than the clarinet does.

The data from the saxophonists showed no misconceptions about the use of corner muscles. Although the average answer for pressure on saxophone was lower than the average answer for pressure on clarinet, five of the saxophonists picked an answer only one number lower for saxophone, while two picked the same number and two picked a larger number for saxophone. The lowest number selected by a saxophonist was 4, meaning that they all correctly recognized both clarinet and saxophone require the use of the corner muscles to form a superior embouchure.

The fourth question for both clarinet and saxophone asked about the use of the chin in the embouchure, with an answer of one meaning that the chin is pulled down away from the mouthpiece, and seven meaning that the chin is pushing up into the mouthpiece. The correct embouchure for both clarinet and saxophone uses a flat chin that pulls down away from the mouthpiece, meaning that the most appropriate response should be 1 for both saxophone and clarinet. The saxophonists had an average response of 2.90 for saxophone (SD=1.52) and 2.44 for clarinet (SD=1.59), indicating a flat chin pulling down for both instruments. The clarinetists had an average response of 2.89 for saxophone (SD=2.09), while all ten selected 1 for clarinet. While there is only a slight disparity in the majority of the answers, the fact that five of the clarinetists selected a larger number for saxophone than for clarinet suggests a misconception
among clarinetists that the chin is more relaxed for saxophone than for clarinet. Yet again, the saxophone numbers are fairly inconclusive. On average, the saxophonists picked smaller numbers for clarinet than for saxophone, suggesting that they too believe the saxophone embouchure is more relaxed than the clarinet embouchure. Individually, three saxophonists picked a larger number for saxophone than clarinet, three picked the same number, and three picked a smaller number for saxophone. More responses would be necessary to draw conclusions about the perceptions of chin usage in clarinet and saxophone embouchure among saxophonists.

The final questions for saxophone and clarinet asked about vertical pressure on the mouthpiece from the jaw and teeth. An answer of 1 indicates minimal pressure, with the teeth just resting lightly on the mouthpiece, while 7 indicates maximum pressure with the teeth biting forcefully. Research showed that both clarinet and saxophone should use minimal pressure from the jaw, meaning an answer of 1 or 2 would be most appropriate. Answers greater than 4 would suggest biting down on the mouthpiece, which restricts air flow, causes tension, and can create a variety of physical issues as well.

Saxophonists had an average answer of 2.50 for saxophone (SD=1.43) and 2.56 for clarinet (SD=1.51), meaning just a slight amount of pressure for both instruments. Four of the saxophonists selected the same number for saxophone and clarinet, while three selected a larger number for clarinet and two selected a smaller number. These numbers suggest that the saxophonists generally recognize that both clarinet and saxophone require very little pressure from the jaw, and that they are generally equal. Of the three that selected larger numbers for clarinet, the highest difference between clarinet and saxophone responses was two and the largest number selected for clarinet was four.
Among the clarinetists, the average answer for saxophone was 2.11 (SD=1.16) and 2.00 for clarinet (SD=1.15). These numbers match up closely with the answers given by the saxophonists, and are well within the range of correct answers. Five of the clarinetists selected the same number for both saxophone and clarinet, while three selected a smaller number for clarinet and one selected a larger number. Of the three who selected a smaller number for clarinet, the largest number selected for saxophone was 3 and the largest gap between answers was 2. Just like with the saxophonists, there were not enough participant answers to suggest a misconception about jaw pressure on either clarinet or saxophone. Both groups correctly recognized that clarinet and saxophone embouchures both use minimal amounts of pressure from the jaw.

**Discussion**

The only pedagogical difference between the embouchures for clarinet and saxophone is the mouthpiece angle. Despite this one simple difference, this research identified three conclusive misconceptions about doubling, all from clarinet players doubling on saxophone. Although saxophone requires a high “ee” tongue position, the surveyed clarinetists identified the position as much lower, residing in the middle or lower portion of the mouth. This tongue position creates an inefficient use of the airstream by leaving too much space in the mouth, which slows the air down. The slower air speed creates an undesirable tone and a greater inconsistency in resistance throughout the range of the saxophone, particularly in the low range. The other two misconceptions are a belief that both the corners of the mouth and the chin are more relaxed for saxophone than for clarinet. Proper saxophone embouchure uses both support from the corners and a chin that actively pulls down away from the mouthpiece, just like the
clarinet embouchure. The relaxed chin and corners both negatively affect the tone. A relaxed chin also creates relaxed corners, and puts too much lip onto the reed which muffles the sound.

No other conclusions could be drawn reliably from the data collected from these participants.

The cause of these misconceptions was not researched, but the researcher believes that it comes from a misconception among band directors. Many band directors teach that the saxophone does have a looser embouchure, and that the student must drop their jaw to get the low notes to speak properly. Dropping the jaw creates the same effect as saying “ahh,” which lowers the tongue position in the mouth. This may arise from a generalization of all wind instruments. Dropping the jaw for low notes is a technique used on brass instruments. In theory, it makes sense for saxophone but in practice only makes things more difficult. Further research could involve an adaptation of the survey for band directors across the state to find out what they know about the two embouchures and how they are teaching them to students.

**Conclusion**

The similarities shared between clarinet and saxophone make them one of the most common doubling combinations for many instrumentalists of all ages and ability levels. Little to no research exists documenting the specific differences between embouchures and problems doublers may experience. The purpose of this thesis was to examine the tendencies and misconceptions of clarinetists and saxophonists when playing a clarinet or a saxophone as a secondary instrument. Although they utilize different fingering systems, are very different in size, and have great differences in resistance, the only difference in embouchure a doubler needs to make is to change the angle of the mouthpiece when switching between the two. The misconceptions clarinetists have about the saxophone embouchure revealed by this research can
be easily fixed by just playing more like a clarinet player: raising the tongue up, pulling the chin down, and tightening the corner muscles against the mouthpiece. These three changes can instantly improve the clarinetist’s ability to play saxophone successfully.

The greatest limitation of this study was the minuscule pool of participants for the survey. With only ten saxophonists and ten clarinetists, averages were easily skewed one way or another by unpredicted answers. This led to the large standard deviation among the saxophonists in particular. There are more than likely a few misconceptions among saxophonists about proper embouchure, but this survey was unable to make any conclusions about them. Another limitation came from the scale used in the survey. Each end of the seven point scale could have been worded more clearly and included pictures for clarity, and included a description and picture in the middle to assist participants. Further research should include an updated survey that includes these pictures and descriptions for the middle of each scale. In addition, further research should include expansion to more universities. With only four of the eight professors who received the email actually forwarding it on to their studios, the study was limited in how many people it reached. More universities, and potentially high schools, would help create a wider pool of participants.

An opportunity for further research exists in surveying band directors across the state to see what they are teaching their students. If the teachers do not know the correct embouchure for clarinet and saxophone, than the students they teach could not possibly know it either. Discovering the misconceptions among band directors would be an effective way to educate them on the differences and proper technique that they need to know for their students.

This research helped show three conclusive misconceptions that clarinetists have about the saxophone. Identifying these three common mistakes can help both clarinetists and educators
across the state in playing and teaching the saxophone correctly. By being aware of these misconceptions, and knowing the correct embouchure for both instruments, both clarinetists and saxophonists as well as their teachers can master the ability to double on a secondary instrument.
Literature Cited


Similar but Different: An Analysis of Differences in Clarinet and Saxophone Pedagogy and Doubler’s Misconceptions

Principal Investigator: Nicholas Carlo

Consent

Invitation to Participate: You are invited to participate in a research project conducted through the University of Northern Iowa. The University requires that you give your signed agreement to participate in this project. The following information is provided to help you make an informed decision about whether or not to participate.

Nature and Purpose: The purpose of my thesis is to examine the differences in tendencies of clarinetists and saxophonists when playing a clarinet or a saxophone as a secondary instrument. This research will help both educators and students at the secondary and collegiate levels be more successful on their secondary instrument. Identifying common mistakes musicians make on their secondary instrument will help prevent future students from making the same mistakes.

Explanation of Procedures: Participants will be asked a series of short questions about clarinet and saxophone embouchure and tone production. The questions will require the participant to pick a number on a scale that best represents the proper function of a particular facet of the embouchure. This data will be averaged so common misconceptions in proper embouchure can be identified by the investigator.

Discomfort and Risks: This research poses no more risk than the risk involved in everyday life.
Benefits and Compensation: This study includes no compensation. Participants may receive some benefit from the results of the survey, as they can apply the conclusions from the research to their knowledge of the secondary instrument.

Confidentiality: This survey will not collect any information that can identify participants individually, so participant confidentiality will be maintained. Only the investigator and faculty advisor, Dr. Kevin Droe, will have access to the data of this survey. Other students within your studio may talk openly about the survey, although I personally will provide as much confidentiality as electronic technology can allow.

Right to Refuse or Withdraw: Your participation is completely voluntary. You are free to discontinue the survey at any time. If you choose to do so, your answers will not be recorded or included in the study. Your professor will have no knowledge of your choice of participation, nor will it affect your grades in any way.

Questions: If you have questions about the study or desire information in the future regarding your participation, or the study in general, you may contact Nicholas Carlo via email at carlon@uni.edu, or the faculty advisor, Dr. Kevin Droe, at kevin.droe@uni.edu. You can also contact the office of the IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights of research participants and the participant review process.

By checking "I agree," I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it and I hereby agree to participate in this project. I am 18 years of age or older.

I agree.

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Similar but Different: An Analysis of Differences in Clarinet and Saxophone Pedagogy and Doubler’s Misconceptions

* Required

Clarinet and Saxophone Embouchure
Please answer all questions for both clarinet and saxophone, regardless of which instrument is your primary or secondary.

What is your primary instrument? *
- Clarinet
- Saxophone

How many years have you played your primary instrument?

What is your secondary instrument, if you have one?
- Clarinet
- Saxophone
- No secondary instrument

How many years, if any, have you played your secondary instrument?

**Saxophone Questions**

On a scale of 1 to 7, approximately what angle should be formed between the mouthpiece and the face for saxophone?

1 2 3 4 5 6 7

As close to parallel as possible (0 degree angle)  Perpendicular (90 degree angle)

On a scale of 1 to 7, where should the tongue be positioned vertically in the mouth for saxophone?

1 2 3 4 5 6 7

Low/bottom of the mouth, as in "ehh"  High/top of the mouth, as in "ee"

On a scale of 1 to 7, how much pressure should be exerted on the mouthpiece using the corners of the mouth for saxophone?

1 2 3 4 5 6 7

Minimal pressure (no use of muscles)  Maximum pressure (full exertion of muscles)

On a scale of 1 to 7, what direction/position should the chin be in to create the saxophone embouchure?

1 2 3 4 5 6 7

Chin pulling down away from mouthpiece  Chin pushing up into mouthpiece

On a scale of 1 to 7, how much vertical pressure should be exerted on the mouthpiece using the jaw/teeth for saxophone?

1 2 3 4 5 6 7

Minimal pressure (teeth just rest lightly against mouthpiece)  Maximum pressure (teeth bite/squeeze mouthpiece forcefully)

**Clarinet Questions**

On a scale of 1 to 7, approximately what angle should be formed between the mouthpiece and the face for clarinet?
As close to parallel as possible (0 degree angle) ☐ ☐ ☐ ☐ ☐ ☐ ☐ Perpendicular (90 degree angle) ☐ ☐ ☐ ☐ ☐ ☐ ☐

On a scale of 1 to 7, where should the tongue be positioned vertically in the mouth for clarinet?

1 2 3 4 5 6 7

Low/bottom of the mouth, as in "ahh" ☐ ☐ ☐ ☐ ☐ ☐ ☐ High/top of the mouth, as in "ee"

On a scale of 1 to 7, how much pressure should be exerted on the mouthpiece using the corners of the mouth for clarinet?

1 2 3 4 5 6 7

Minimal pressure (no use of muscles) ☐ ☐ ☐ ☐ ☐ ☐ ☐ Maximum pressure (full exertion of muscles)

On a scale of 1 to 7, what direction/position should the chin be in to create the clarinet embouchure?

1 2 3 4 5 6 7

Chin pulling down away from mouthpiece ☐ ☐ ☐ ☐ ☐ ☐ ☐ Chin pushing up into mouthpiece

On a scale of 1 to 7, how much vertical pressure should be exerted on the mouthpiece using the jaw/teeth for clarinet?

1 2 3 4 5 6 7

Minimal pressure (teeth just rest lightly against mouthpiece) ☐ ☐ ☐ ☐ ☐ ☐ ☐ Maximum pressure (teeth bite/squeeze mouthpiece forcefully)

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## Appendix B

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