Spring 5-10-2017

The Chemistry of Matching Italian Foods with Wines

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Thesis Summary:

This report attempts to explain the science behind matching Italian food with wines. Common knowledge states that certain wines make better pairings with certain food dishes, but the general public knows little about why these foods and wines make better matches. This paper aims to use examples of tastings of Italian foods with different wines in order to educate its readers on the science behind the pairings. Before these tastings are analyzed, background information is provided about the science of taste. A description of the five basic tastes is given, separating them into appetitive and aversive tastes, and the chemistry of how these tastes are perceived is explained. These tastes are then applied to some of the typical Italian foods and wines.

Then, the basics of wine pairing and the science behind the tastes of different wines are explained in order to give the readers adequate background knowledge to read about the tastings performed in the experiment. This paper describes several components that contribute to the overall flavor of wine, including tannins, acidity, sugar content, and body. Tannins occur only in red wines and are responsible for the bitter, puckering flavor of the wine. Acidity is a key component of a number of wines and particularly contributes to the puckering flavor in white wines. Sugar content is derived in wines through a number of different methods, including the residual sugar, fortification, and noble rot. This contributes to the sweetness of the wine. Finally, body is the intensity of flavors in the wine. This is a very important component of food pairing and ranges from light to full bodied.

Eight traditional Italian dishes were selected to cover as many aspects of Italian food as possible, and three wines were tasted with each dish. The dishes selected were lasagna, chicken parmesan, spaghetti Bolognese, parmesan risotto, chicken and shrimp pasta, pizza margherita,

bruschetta, and tiramisu. This selection covers dishes with red and white sauces, red and white meats, seafood, rice, different cheeses, an appetizer, and a dessert. A variety of wines were also selected to pair with each dish. For each recipe, at least one red and one white wine were selected. A wine that was expected to pair well with the dish and one that likely would not were also selected when choosing the three wines.

After selecting the recipes and wines, the dishes were prepared. Each dish was tasted with all three wines, and the pairings were analyzed for a variety of characteristics. Additionally, the level of match was notated, from a negative match up to a synergistic match. After notating initial impressions of the pairings, the science behind pairing wines with that particular dish is discussed, attempting to help readers to apply the knowledge learned in the introduction to these specific examples. In each case, the tasting notes seemed to correlate with the expected results from the chemistry of the food, aligning with the idea that the mystery of pairing food and wine can be deciphered through science. Two wines that paired well with each dish were used to construct a cookbook containing the eight specific recipes used, the wines tasted, and a brief explanation of why specific wines were effective.

Introduction:

This report outlines an experiment in which the science of pairing Italian foods with wines was evaluated by tasting traditional Italian dishes with a variety of wines. It is generally agreed that certain wines pair better with some food dishes than others. However, most individuals know little about the science of what makes certain pairings superior. If the general public becomes more educated in the foundations of pairing wine with food, they will be able to select appropriate wines to enhance their eating experiences. The aim of this experiment is to use tastings of Italian foods with various wines to verify some common wine pairing advice and give readers background information on the science behind the pairs.

To better understand the art of pairing of foods and wines, one must first understand the basic science of taste. Taste involves substances in food reacting chemically with taste buds in the tongue, and different molecule interactions lead to different tastes. Most scholars who study the physiology of taste claim that there are five basic tastes, including salty, sweet, sour, bitter, and umami (Miller). The sensation of saltiness is caused by sodium in food, which triggers sodium channels in cells within taste buds. This depolarizes the cells, leading to release of calcium ions, which activate neurotransmitters associated with positive feeling and the salty taste. Other positive ions, especially in the alkali metals group, also can depolarize these cells and yield a salty taste, with potassium and lithium being the most effective (Silverthorn). These ions are beneficial as electrolytes to carry electrical impulses through the body, which is why they have an appetitive, or appealing, taste (Miller).

Sweetness is another appetitive taste and is related mainly to the presence of sugars in food. Sweet taste is caused by sugars binding to G-protein coupled receptors on the outside of the taste

cells. These receptors then send a protein called gustducin into the cell and lead to neurotransmitters being released that correspond with positive feeling and the sweet taste (Silverthorn). This response developed so humans could recognize foods with large amounts of energy in the form of sugars (Miller). Another similar appetitive taste is umami, which can also be described as a savory or meaty taste. It is caused by the molecule glutamate binding to other G-protein coupled receptors on taste cells. The binding of the glutamate causes a different pathway to happen that leads to a similar neurotransmitter release associated with positive feeling and the perception of the umami taste (Silverthorn).

Contrary to these appetitive tastes, there are some tastes that are considered to be aversive, which are generally unappealing to us, because the body is trying to alert the brain that the food may be harmful. The two basic aversive tastes are sourness and bitterness. However, as humans evolve and no longer have as many worries about eating harmful foods, bitter and sour tastes grow more appealing, especially in smaller amounts and when mixed with other tastes ("Two Great Tastes"). The bitter taste operates very similarly to the sweet taste – it also involves binding to G-protein receptors and the release of gustducin. However, these responses happen on type 2 taste receptors, which recognize a breadth of molecules that correspond to bitter tastes, such as quinine. Many of these are toxic to the human body. They also signal a different pathway from sugars that leads to release of different neurotransmitters that correspond with the generally unappealing bitter taste (Silverthorn).

The last basic taste is sourness, which is also an aversive taste. This taste operates similarly to saltiness and mainly detects acidity in foods. In the same way that the taste cells are depolarized by sodium and other ions to trigger a salty taste, they can also be depolarized by the hydrogen cations related to acidity. This depolarization causes these nerve cells to release neurotransmitters

that create the generally unappealing sour taste to warn the body of acidic foods such as under-ripe fruits and rotting meats (Silverthorn). However, like bitterness, the sour taste is often enjoyed when mixed with other tastes and is a common component of many foods and especially wines.

Italian foods and wines exemplify these five tastes. Salt is added to many foods and is also an inherent ingredient in many cheeses and cured meats, such as prosciutto and salami. Sweetness is found in many desserts, but is also an important component in some cheeses and sauces. It is also key to the taste of many wines. Umami is very prevalent in Italian foods as it is the primary taste associated with tomatoes, meats, and sharp cheeses. Sourness is added to some foods, primarily through adding citrus with fruits such as lemon, and is also a component of some wines. Bitterness is primarily associated with wines rather than foods and but is found in olives and coffee (Chartier).

Additionally, the way one perceives tastes and flavors is influenced by the aromas of the food or drink. While taste is actually only influenced by chemical signals from the mouth, the flavors perceived are influenced by both the mouth and nose. Certain aromas correlate to the basic tastes and can either enhance or negate the reaction with the taste buds. For example, a caramel odor will make a sugary food taste more sweet than normal, and it can also minimize the sourness of an acidic food. It has also been shown that an odor can add flavors to an otherwise tasteless food (Spence). Therefore, the aromas of foods and wines can also be considered when evaluating their pairings.

Restaurants and wine connoisseurs typically have a general idea of which type of wine to pair with types of food. For example, many people know to pair white wines with cheeses or white meats and red wines with red sauces or red meats. However, very few people know anything more specific and are therefore more limited in their matching ability. Through some brief research, it

was discovered that some more specific common advice was to pair acidic foods with acidic wines, salty foods with sweet wines, and fatty foods with bitter wines, acidic wines, or wines with high alcohol content. From the perspective of the wines, acidic wines match well with sweet foods or fatty foods, bitter wines pair well with sweeter foods, and sweet wines pair with acidic foods or desserts (Puckette and Hammack). Within this experiment, the acidity, sweetness, fattiness, and body were some of the main characteristics focused on while tasting the dishes and wines.

There are a number of components that contribute to the overall experience of a wine and the ways in which it pairs with food. One major component of wines are tannins. These are derived from the skins of grapes and therefore are only found in red wines. This is the component of wines that tastes almost bitter (Kissack). Tannins actually remove proteins from the tongue. This is what causes the drying and puckering sensation experienced with highly tannic wines (Puckette and Hammack, 10). Tannins can be very harsh in young wines but over time they fade and develop into rich, complex flavors (Kissack). Tannins are able to clear the mouth of fattiness and refresh the palate in between bites that may be rich in fats. Because of this, highly tannic wines are usually paired well with fatty foods.

Another component of wine that contributes to the way that wine is experienced is the acidity of the wine. The acidity of the wine depends on a number of factors including; when the grapes were harvested and the climate of the region. As grapes ripen on the vine, the sugar content of the grapes increase while the acid content decreases. Due to this, the younger the grapes, the more acidic the wine. In addition, wines from cooler regions tend to have higher acidity than warmer climates (Kissack). There are several different types of acids present within a wine that contribute to the acidic quality. The acids already present within the grape are the natural fruit acids: malic, tartaric, and citric (Young, 91). There is another class of acids that arise during the

fermentation process and through other reactions during maturation. These acids are lactic, acetic, succinic, formic, propionic among others (Young, 91). Despite all these acids being present malic and tartaric acids are the two most common acids found within wine (Young, 92). Malic acids arises from the grape itself. It diminishes during the fermentation process and is the acid responsible for the slightly acidic punch of some wines (Young, 96). In addition, Tartaric acid is the most abundant and strongest acid found within wine. When it is attacked by lactic bacteria, it produces both lactic and volatile acidity (Young, 96). Volatile acids are the acids produced during fermentation.

Another component that contributes to the overall quality and flavor of wine is the sugar content within the wine. Residual sugar is the concentration of grape sugar left in the wine after fermentation. In white wine, this sugar begins to be perceivable at 0.4 percent by volume. In red this detectable amount is at 1.5 percent by volume due to the tannins that are in red wine. Sugar can also be added to the wine in order to create a sweeter experience. A majority of the time, the sweetness individuals register in wine is actual fruitiness (Young, 98). Sugar can also be added to wine by using a fungus called botrytis, or "noble rot". Noble rot infects a number of fruits and vegetables and dehydrates and decays them. When creating wine with grapes infected by noble rot, it is necessary to use a higher quantity of grapes. Because of this effect, the sugar content within this wine is much higher and the wines often have a higher alcohol content (They Call it 'Noble Rot').

The body, or intensity, of a wine similarly affects the quality of the wine and the way in which it pairs with food. A combination of the sweetness, acidity, tannins, and alcohol within a wine all contribute to how light or bold the body or a wine is perceived to be (Puckette and Hammack, 11). Wines are often described as lighter of full bodied depending on the effect of these

various characteristics. Lighter bodied wines tend to have higher acidity, lower alcohol, less tannins, and are less sweet. Bolder wines on the other hand have less acidity, higher alcohol content, more tannins, and a higher sugar content (Puckette and Hammack, 11).

There is disagreement among those who study food and wine pairing about what characteristics of the food and wine are most significant in determining a match. It is known that the flavors, texture, and components of the food and wines all have an impact on their ability to match (Koone). The *components* are the basic elements of a food or wine that affect sensory experience, such as sweetness or bitterness. *Texture* refers to how the food or wine is felt with the consumer's sense of touch and includes temperature, weight, and power. *Flavors* refer to more specific sensory perceptions using taste and smell. Examples of flavors are fruity, smoky, cheesy, and spicy (Harrington). This experiment will evaluate all three characteristics and will combine them in an attempt to make cohesive judgments about the effectiveness of the individual food and wine pairings.

A "good match" is one where the wine matches the food's basic components, texture, and flavors. A "synergistic match" is defined as a pairing that causes both the food and wine to taste better than they do on their own (Harrington). Additionally, there are "neutral matches" and "negative matches" for wines that do not match well. If the food and wine do not pair but are both still good on their own, it is a neutral match, and if they taste worse because of the pairing, it is a negative match.

Methods:

To evaluate the science of pairing Italian foods with wines, 8 traditional Italian dishes were prepared and each was tasted with three different wines. A variety of dishes were selected in an attempt to represent as many types of traditional dishes as possible. Also, as this experiment was performed by college students on a college student budget in a resident hall kitchen, the recipes needed to be simple, inexpensive, and able to be prepared with minimal equipment. The dishes selected were lasagna, chicken parmesan, spaghetti bolognese, parmesan risotto, chicken and shrimp pasta, pizza margherita, bruschetta, and tiramisu.

Lasagna was selected first because it is a very traditional dish with a red sauce and ground beef as well as mozzarella and parmesan cheeses. The breadth of ingredients allowed for many factors to evaluate. Spaghetti bolognese was similarly selected for the red sauce and ground beef, but because it did not have cheese, it could be compared and contrasted to the lasagna. To contrast the spaghetti and lasagna, parmesan risotto was selected as a creamy and cheesy dish with no meat. This represented a lighter dish and was also based on rice instead of the typical Italian pastas. Chicken Parmesan was selected as it is a traditional dish that covers white meat, allowing for comparison between white and red meats. This dish included red sauce and cheese, similar to the lasagna. Next, a chicken and shrimp pasta with white sauce was selected as another white meat dish but with white sauce instead of red. This preparation also represented a seafood dish, adding to the diversity of the recipes selected. Pizza margherita was also selected as a balanced dish and to represent a very typical Italian dish. Bruschetta was also selected to represent an appetizer and a light bread dish, as well as a vegetarian dish. Finally, tiramisu was selected to cover a dessert option with different flavors than the rest of the dishes. Ultimately, this selection covers dishes

with red and white sauces, red and white meats, different cheeses, seafood, a rice dish, an appetizer, and a dessert.

A variety of wines were selected that were believed to potentially pair well with the different dishes. Whenever possible, a white and red wine were used along with another wine that was expected to pair well. At least one wine that was not traditionally paired with the given dish was chosen in order to offer a wine for comparison. By selecting a variety of wines in this fashion, a wide sample of flavors, textures, and components that could accentuate the components of the food were encompassed. Also, at least one wine that was slightly more expensive and one wine that was slightly less expensive were chosen when possible in order to ensure that the wines and dishes could be made on a typical college student's budget. The more expensive wine was provided to make it possible to make the dish pairing slightly more high-end.

Three different wines were tasted with each dish. They were sampled using a technique of taking a sip of wine, a bite of food, and then another sip of wine. The pairing was assessed for a number for different characteristics. If the dish was particularly fatty, then the wine was assessed for acidity or tannins in order to contrast the wine and dish. The acidity or tannins within a wine are able to cut through the fattiness of a dish and act as a palate cleanser between bites. The flavors present in the wine were also assessed when attempting to select the best match. It is ideal to have complementary flavors within the wine and dish, such as black pepper or a smoky flavor. Another important aspect that was assessed was the overall body of the wine. If a wine is too harsh or flavorful, it can overpower the flavors in the dish, which does not make for an ideal pairing.

Results:

Table 1: Perceived level of match for wines tasted with each dish

Bruschetta	**Chianti**	**Pinot Grigio**	**Beaujolais Nouveau**
	Negative Match	Neutral Match	Good Match
Lasagna	**Merlot**	**Pinot Grigio**	**Cabernet Sauvignon**
	Negative Match	Neutral Match	Synergistic Match
Parmesan Risotto	**Merlot**	**Chardonnay**	**Pinot Grigio**
	Negative Match	Good Match	Good Match
Spaghetti Bolognese	**Pinot Grigio**	**Chianti**	**Red Zinfandel**
	Negative Match	Synergistic Match	Good Match
Pizza Margherita	**Red Zinfandel**	**Chardonnay**	**Beaujolais Nouveau**
	Good Match	Neutral Match	Synergistic Match
Chicken Parmesan	**Chianti**	**Pinot Noir**	**Moscato**
	Neutral Match	Synergistic Match	Negative match
Chicken and Shrimp Pasta	**Pinot Grigio**	**Chardonnay**	**Cabernet Sauvignon**
	Synergistic Match	Good Match	Neutral Match
Tiramisu	**Moscato**	**Prosecco**	**Beaujolais Nouveau**
	Good Match	Synergistic Match	Negative Match

Table 2: Brand name and price range for wines utilized in this experiment

Type of Wine	**Name**	**Price**
Merlot	Charles Shaw	$2.99
Pinot Grigio	Charles Shaw	$2.99
Cabernet Sauvignon	Greg Norman Estates	$12.99
Chardonnay	St. George Select Reserve	$10.58
Chianti	Ruffino	$7.99
Red Zinfandel	Beringer	$10.99
Beaujolais Nouveau	Georges Duboeuf	$12.95
Prosecco	La Marca	$13.99
Moscato	Sutter Home	$12.20
Pinot Noir	Greg Norman Estates	$13.99

Discussion:

Bruschetta

Bruschetta was paired with Chianti, pinot grigio, and beaujolais nouveau. The particular recipe used for bruschetta in this study included tomato, onion, basil, garlic, and olive oil, and was relatively light-bodied and contained mostly mild flavors. Because of this, any fuller bodied wine would simply overpower the taste and drown out any subtle flavors found within the bruschetta. The high acidity of the tomato component would require a more acidic wine pairing in order to be complimentary. In addition, similarly to the pizza margherita, the subtle basil flavors within the dish could be brought out by similar flavors in the wine.

Chianti did not match very well, as the body of the Chianti was strong and overwhelmed the flavor of the bruschetta. Pinot grigio was a neutral match, the acidity matched well with the basil and bread but its slight bitterness contrasted with the tomatoes. Beaujolais nouveau was a

strong match because the body of the beaujolais nouveau paired well with the tomatoes, but it was also lighter than the Chianti and paired well with the lighter flavors of the bread and basil. Also, its acidity matched very well with the components of the food. This pairing improved the flavors of both the bruschetta and the wine, making it a synergistic match.

Lasagna

With lasagna, and merlot, pinot grigio, and cabernet sauvignon were tasted with it. Lasagna is a food that has a fairly high fat content as well as a decent amount of acidity from the tomatoes typically used in the sauce. In addition, it has a higher umami content that rounds out the dish. Because of these components, there are a number of things that are necessary to create a good or synergistic match. To counteract the fat content of the dish, it is advisable to pair it with a wine that is high in either acidity or tannins. This is because both of these components have the ability to remove the oils and fats from the mouth and create a refreshing feeling between bites. Fattier foods often create a coating in the mouth. This coating is unpleasant, and can actually be worsened by a wine with a high sugar content. A slightly acidic wine would be preferable as well because it would complement the acidity of the tomatoes in the dish. In addition, Lasagna is a lighter-bodied dish with no particularly overpowering flavors, because of this a similarly bodied wine would pair well as it would not overpower the flavors of the dish.

With the merlot, lasagna actually seemed to make the wine taste worse. It was a negative match. The merlot tasted in this experiment was very sweet and contrasted negatively with the fattiness of lasagna. The high sugar content enhanced the undesirable sensation from the fattiness of the lasagna rather than clearing the palate, and while the tannin level was high, it was not enough to overcome the poor match of the sugar and fattiness. The pinot grigio paired surprisingly well for a white wine. The acidity of the wine counteracted the fattiness of the cheese without

overpowering it. A drop of lemon juice on a bite of lasagna made this match better and slightly improved the taste of the wine. This is due to the citric acid within the lemon complementing the acidity of the tomatoes in the dish. However, the wine was too light for the body of the lasagna. The cabernet sauvignon matched really well with the lasagna. The flavors melded together well and the body of the wine matched the body of the red sauce in the lasagna without overwhelming it. Also, the high tannin level and moderate acidity helped to cleanse the palate from the fattiness of the lasagna. The wine tasted better after a bite of lasagna than it did alone, and the lasagna also tasted better after the wine, making this a synergistic match.

Parmesan Risotto

When tasting the parmesan risotto, merlot, pinot grigio, and chardonnay were tested as potential matches. The primary flavor in the risotto was a mild cheesy flavor. The dish itself had a higher fat content, due to the cheese and a very slight umami flavor added by the chicken broth. The risotto was a very light bodied dish and therefore its flavors would be easily overpowered by a fuller bodied wine. In addition, the fat content of the dish requires a more tannic or acidic wine in order to refresh the mouth between bites. Because of this combination of factors, a more acidic white wine would be the best pairing, as highly tannic red wines tend to be fuller-bodied.

The merlot was not a good pairing with the risotto. Although its high tannin level should have helped with the fattiness of the risotto, the wine was too strong and full and overpowered the dish. The pinot grigio paired well – the acidity of the wine worked well with the cheesy and fatty flavor of the risotto. The dryness of the wine was also a nice contrast to the thick, creamy cheese in the risotto. Adding a drop of lemon juice to the risotto and then trying it with the wine improved the pairing, similarly to the lasagna. The chardonnay also paired well. The citrus and fruity flavors of the chardonnay complemented the cheesy flavor of the risotto, and its acidity also worked to

counteract the coating in the mouth from the fattiness of the food. Adding a drop of lemon juice to the risotto and trying it with the chardonnay improved the pairing a little, but not as much as the pinot grigio.

Spaghetti Bolognese

With the spaghetti Bolognese dish, a pinot grigio, Chianti, and red zinfandel were tasted. The flavors found within the spaghetti Bolognese dish differed from those in the previous two dishes. It contained flavors of black pepper from the sauce as well as high acidity from the tomatoes found within the sauce. In addition, the ground beef added an overall umami flavor to the dish. This dish was more full-bodied, and thus required a wine pairing that likewise has a fuller-body. In addition, a wine with a higher acidity can complement the acidity of the tomatoes in the dish. Flavors of black pepper within a wine pairing could also add a level of complementarity between the wine and the dish.

The pinot grigio did not pair well with the spaghetti Bolognese. Although the pinot grigio had moderate acidity to match the acidity of the dish, its light body was overpowered by the flavors and body of the dish. In contrast, the Chianti paired very well with the spaghetti Bolognese. The very high acidity of the Chianti paired well with the acidity in the spaghetti Bolognese sauce, and the moderately strong body of the Chianti held its own tastes but did not overwhelm the spaghetti. The red zinfandel also similarly paired well with the spaghetti Bolognese, although not as well as the Chianti. Again, the acidity of the wine paired well with the acidity of the tomato in the sauce and the body of the wine was not overpowering, but the acidity was significantly less than the Chianti and therefore a weaker match.

Pizza Margherita

With the pizza margherita, red zinfandel, beaujolais nouveau, and chardonnay were tasted. The pizza shared a similar flavor profile to the lasagna mentioned previously. The cheeses added a level of fattiness to the dish that requires a wine pairing higher in acidity or tannins. Acidity would be preferable in the wine, as it would mirror the acidity of the tomatoes within the dish. The pizza also contained flavors of basil, which could be brought out by similarly light or earthy flavors found in the wine.

Red zinfandel was a good match with the pizza because the strong body and flavor of the wine paired well with the stronger flavors of the tomato sauce. However, it was too bold and smoky to match well with the lighter flavors of pizza margherita. Beaujolais nouveau was a very good fit - again the stronger body of the beaujolais nouveau paired well with the sauce, but this wine was lighter than the red zinfandel and also paired well with the cheese and basil, making it a better match. Additionally, beaujolais nouveau is a very acidic wine, and its acidity cut through the fattiness of the cheese while complementing the acidity of the tomato sauce. Chardonnay was the weakest pairing, but still was not bad. Although chardonnay is full-bodied for a white wine, it was still too light for the tomato sauce. However, it still was a decent match because the lighter fruity flavors and the earthiness of the wine complemented the cheese and basil.

Chicken Parmesan

Chicken parmesan was paired with a Chianti, pinot noir, and moscato. This dish has a similar profile to the pizza and lasagna. It had strong acidity from the tomatoes and a relatively high fat level from the cheese in the dish. In addition, the chicken parmesan has a strong umami flavor and more of a black pepper flavor from the meat in the dish. Because of all these components, a good wine pairing would have higher acidity or tannins to cut through the fattiness.

Higher acidity and black pepper flavors in the wine would complement the flavors present in the dish as well.

The moscato did not pair well with the chicken parmesan at all. The moscato was too sweet and accentuated the acidity of the tomato sauce, making it taste bitter. In addition, the flavor of the moscato was completely overpowered by the flavors in the heavier bodied dish. The Chianti was a neutral pairing because the flavor of black pepper within the dish and wine complemented each other well but the strong body of the wine slightly overpowered the mild flavors of the cheese and chicken. The pinot noir, on the other hand, paired excellently with the dish. The black pepper flavor within this wine, paired excellently with the black pepper flavors in the dish. The tannins in the wine also counteracted the fattiness of the cheese well without overpowering them. This was a synergistic match.

Chicken and Shrimp Pasta

The chicken and shrimp pasta was paired with pinot grigio, chardonnay, and cabernet sauvignon. The sauce of this dish was rich and cheesy which requires a wine pairing that is higher in acidity and tannins in order to refresh the mouth after each bite. The dish also included a seafood component with the shrimp. Seafood has a very light body and is easily overpowered by wines with a fuller body. For this reason, seafood dishes are traditionally paired with white wines.

The pinot grigio was a very good match. The dryness of the wine served as a nice contrast to the creaminess of the white sauce on the pasta. Also, the acidity of the wine and its light body paired well with the fish, as well as the chicken to a lesser extent. The wine seemed to make the food taste better than it did previously, making this a synergistic match. The chardonnay was also a good pairing. The fruity flavors paired well with the fish and chicken, and its lighter body also complemented the creamy sauce and white meats. However, as it was more full-bodied than the

pinot grigio, it was a weaker pairing. The cabernet was a weaker match than the white wines. Its body strongly overwhelmed the creamy sauce and its bold flavors and bitterness did not match well with the fish and chicken.

Tiramisu

With the tiramisu, moscato, beaujolais nouveau, and prosecco were tasted. The tiramisu had a drastically different flavor profile than the previously sampled dishes. It had a sweet flavor due to the cookies and whipped cream. Despite this, it had a relatively light texture, and was only somewhat fatty. The dish was also relatively full bodied due to the strong flavors of the espresso. When choosing a wine to pair, it was important to choose something similar in body to the dish - a fuller-bodied wine would pair quite well. In addition, the sugar content of the wine needs to be considered. It is important to pick a wine with a similar sugar content to the dish so that neither made the other taste too sweet by comparison. In addition, a sparkling wine would have the ability to cut through some of the richness of the dish and refresh the palate between bites.

Moscato was a good match, as the sweetness of the wine complemented the dish very well. It also was not too acidic or overpowering with the flavors of the dish. However, it had a very light body and was somewhat overwhelmed by the strong espresso flavor. Beaujolais nouveau did not match at all as its body strongly overpowered the taste of the dessert. Additionally, as it was a red wine, the bitterness of the wine also did not complement the sweet flavors of the tiramisu. Prosecco was a synergistic match. The sweetness and high acidity of the wine paired very well with the sweetness of the tiramisu. In addition, the bubbles added a refreshing burst to break up the richness of the dessert.

For each food that was chosen there were any number of wines that would fit the proper pairing descriptions given above. Because of this, pairing wine and food can be turned into a very

personal experience. One can choose a wine within their price range, or a wine they particularly enjoy as long as it fits within the necessary criteria of the dish. Many believe that there is a potentially perfect wine for each dish, but based on the experience of this study, this is not necessarily true. In addition, the wine one chooses and choosing a wine within the criteria can completely change the experience of a dish. Wines can elevate a particular flavor of a dish or create a more mild flavor. Through this study, the conclusion was reached that wine can be a pivotal part of any meal and can be chosen based on its desired pairing with a particular dish to optimize one's eating experience.

Appendix:

Appendix A: Food and Wine: A Collection of Italian Food and Wine Pairings

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