BACKGROUND

- Experts have generated several "rules" to act as guidelines when pairing wine and food (e.g. red wine with meat, white wine with fish)
- Many factors are proposed to influence a food and wine match:
  - gastronomy
  - the important elements of food and wine components, textures and flavors (e.g. Immer, 2002; Rosengarten & Wesson, 1989).
- These rules for food and wine pairing are established in the anecdotal literature
- Little empirical research has been published considering perception of match based on these key elements

WEAKNESSES IN THE LITERATURE

- Weaknesses in the existing literature include:
  1) a general lack of empirical tests of food and wine relationships,
  2) small sample sizes limiting generalizability,
  3) limited research using foods other than cheeses,
  and 4) a lack of analysis of the moderating effect of expertise level and controlling for gender.

OBJECTIVES OF THIS STUDY

This research examined the potential of predicting wine and food match levels using a scoring approach to wine and food element profiles.

- The following research questions were addressed:
  1) Does wine sweetness directly affect the perceived level of food and wine match?
  2) Does acidity directly affect the perceived level of food and wine match?
  3) Does tannin level directly affect the perceived level of food and wine match?
  4) Does food and wine expertise/experience directly affect the perceived level of food and wine match?
  5) Are there interacting effects between food and wine expertise and wine elements affecting perceived level of food and wine match?
EXTENSIONS TO EARLIER RESEARCH

- Adds other types of foods in addition to cheeses.
- Examines the direct effect of wine component and texture elements on perception of match.
- Individual differences in expertise/experience on the perception of match, interactions between wine elements and experience.
- This study tests the effects of:
  - perceived differences in wine sweetness levels, acidity levels, and tannin levels on level of perceived match with cheese, salami and chocolate
  - effects of level of food and wine expertise on food and wine match perceptions.

METHODS

- Measurement instrument was adapted from previous research (Bastian, et al., 2009; Harrington, et al., 2010).
- The instrument had five sections:
  1) tasting instructions, 2) wine and food expertise self-evaluation, 3) value bands and food/wine attribute level descriptions, 4) evaluation of wine sweetness, acidity and tannin levels, and 5) food and wine level of match.
- The wines included Sauvignon Blanc, oaked Chardonnay, Cabernet Sauvignon and Port.
- Food evaluation order:
  1) chèvre (fresh goat’s milk cheese), 2) brie (soft cow’s milk cheese), 3) spicy Italian salami, and 4) milk chocolate.
- Wines were evaluated with each food with lightest to fullest style.

DATA ANALYSIS

- Paired t-tests assessed differences among perceived level of match with each food item.
- Tests direct and moderating effects utilizing hierarchical regression.
  - The direct effect of food and wine expertise on perceived match
  - Food and wine expertise moderating relationship between wine elements and level of perceived match
  - Direct effects of perceived wine sweetness, acidity, tannin and food & wine expertise perceptions were entered first into the regression equation, followed by the 2-way interaction terms (Saks, 1995).
- For all tests, gender was included as a control variable.
RESULTS AND DISCUSSION

Overall, the highest level of perceived match for each food and wine pairing:
1) chêvre and Sauvignon Blanc,
2) brie and Chardonnay (non-significant differences SB, CHD, and CS)
3) spicy salami and Cabernet Sauvignon,
4) milk chocolate and Port.

The tests using regression provided several significant direct effects between level of match and perceived key wine elements.

DIRECT EFFECTS BETWEEN LEVEL OF MATCH AND KEY WINE ELEMENTS

For the chêvre relationships,
- perceived sweetness levels in Sauvignon Blanc (SB) and Chardonnay had positive relationships with level of match.
- It is not clear if sweetness perceptions were driven by:
  - inconsistencies in use of the scale
  - inconsistencies in sensitivity to residual sugar perceptions,
  - fruity characteristics being interpreted as sweetness,
  - an alcohol impression of sweetness,
  - or the acidity-sweetness balance relationship.
- Following relationships of high acid wines and high acid cheeses (Werlin, 2000), SB acidity level had a positive relationship with level of match with the chêvre.

BRIE MATCH TESTS

- Perceived sweetness and tannin in the Chardonnay provided a significant and positive relationship with match.
- Tannin in SB had a positive relationship with match.
- While the CHD may have some tannin derived from contact with oak, the SB used did not have oak contact and was done completely in stainless steel.
- Was participants' perception based on bitterness as the astringency in tannin for the SB sample?

MATCH WITH SPICY SALAMI

- Gender had a significant relationship in the SB match level indicating a preference by male participants of this match.
- A negative relationship with SB acidity and perceived match with the spicy salami.
- Supports a tannin and animal fat relationship with the spicy salami match tests
- Perceived tannin level had a significant and positive relationship for both Cabernet Sauvignon and Port.
MILK CHOCOLATE MATCH

- Sweetness and tannin levels in the Chardonnay had positive relationships with the level of match.
- Because the CHD was slightly sweeter than the other two dry table wines, this finding supports the notion of sweeter foods pair better with sweeter wines.
- Port match had a positive relationship with FWE.

FOOD AND WINE EXPERTISE (FWE) EFFECTS

- FWE had a direct relationship with perceived match of wine and food.
- For both the chêvre-Chardonnay and spicy salami-Chardonnay match level, FWE had a significant and positive relationship with match.
- Brie tests - FWE had a significant and positive relationship for level of match with both SB and Chardonnay pairing.
- For the level of match between Port and milk chocolate, FWE had a significant, positive relationship with perceived match.
- Taken together, it appears greater food and wine expertise has an impact on the perception of match as well as the ability to discern slight differences in attribute levels.

TESTS FOR MODERATING EFFECTS

- Two significant interactions were apparent:
  1) the interaction between SB sweetness and FWE on the average level of match with spicy salami,
  2) the interaction between Port acidity and FWE on the average level of match with milk chocolate.
- To interpret these interactions, wine element levels and FWE levels were separated into low and high groupings. Once categorized, these were plotted on a graph for interpretation.

INTERPRETATION OF THESE INTERACTIONS

- SB sweetness X FWE on the average level of match with spicy salami:
  - the high FWE group = no difference in match between the SB and spicy salami based on an assessment of SB sweetness level.
  - the low FWE group = match substantially higher when low expertise group members perceived SB sweetness levels to be higher.
- Port acidity X FWE on the average level of match with milk chocolate:
  - the high FWE group = the chocolate-Port match higher regardless of Port acidity ratings.
  - The significant difference appears to be that, when members of the low FWE group rated the acidity in the Port at higher levels, the average match level was greatly reduced.
  - High FWE group members provided more consistent sweetness and acidity evaluations than low FWE group members.
CONCLUSIONS AND IMPLICATIONS

• Overall, the highest perceived food and wine match levels for each wine and food item are in line with earlier studies and those proposed in popular texts.
• FWE, perceived levels of wine acidity, wine sweetness and tannin levels had significant relationships with match perceptions with food items.
• FWE had both direct and interacting effects on perceived levels of match among wine styles and food items used in this study.

CONCLUSIONS AND IMPLICATIONS (2)

• The variance accounted for by the models used in this study was relatively low from a purely statistical standpoint with the largest at 12%.
• Because wine and food is generally perceived as good unless key elements in food items are above normal boundaries (i.e. highly sweet, sour, salty, bitter or spicy), this relatively small level of variance that is accounted for is likely to have practical significance on perception of match by knowledgeable consumers.
• In other words, small changes in wine or food elements to enhance a match are likely to provide a positive outcome in the dining experience.

CONCLUSIONS AND IMPLICATIONS (3)

• For practitioners in the wine and foodservice industries,
  • an understanding of key wine elements impact on perceived match
  • as well as an understanding of the relationship between consumer food and wine expertise on perceived match is needed to maximize the consumer food and wine experience.
• Further tests of wine elements from various wine types with food items and the impact on perceived match level are needed.