2024 Faculty, Staff, and Students Research Poster Session

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Book of Abstracts

2024 Minot State University Research Poster Session
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LAND OF HELICOPTERS AND BUBBLE WRAPPED BABIES: THE PSYCHOLOGICAL AND PRACTICAL EFFECTS OF OVERPARENTING ON COLLEGE STUDENT EMOTIONAL WELLBEING AND ACADEMIC PERFORMANCE

Shawn Bennett, Krystal St. Peter, and Penny Craven
Department of Behavioral Sciences and Criminal Justice

Being subjected to helicopter parenting while growing up can impact people in a variety of different ways. One potential outcome may be a sense of learned helplessness, or a state that occurs after repeated stressful situations that lead an individual to give up as they feel they are unable to control or change a situation. Helicopter parenting can come from not only from the traditional sources of mothers and fathers, but potentially siblings as well. The current study expands on previous research by administering a modified helicopter parenting scale that has been split into four distinct helicopter scales: Mother, Father, Sibling, and Self. This allows for further insight into the potential types of helicopter behaviors experienced by participants. In addition to these helicopter scales, participants completed several other assessments on psychological wellbeing and academic performance. Of interest here, we aim to examine the relationship between Learned Helplessness and scores on the Helicopter Mother, Helicopter Father, Helicopter Sibling, and Helicopter Self scales. Data collection for this study is still ongoing and analysis of the data will be completed by mid-April.

MEMORY FOR TRIVIA

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We learn something new every day but not everything we learn tends to be remembered equally. Previous research has found that emotional valence can have either a negative or a positive effect on how likely someone is to remember something. However, little research has examined the specific role of emotion in memory for semantic pieces of information, such as trivia facts. Most of the research on memory for trivia involves the relationship between interest and memory. The current study aims to expand on this basic relationship and compare recall memory for negative, neutral, and positive trivia facts that had been previously tested and rated to be equally interesting. Participants in the current study were exposed to 120 trivia statements (40 negative, 40 neutral, and 40 positive). For each trivia statement, participants answered two questions: "How surprising did you find this fact?" on a 5-point scale (0 = "not at all, I already knew this to be true, 4 = "extremely surprising, I would not have guessed that to be true") and "How interesting did you find this fact?" on a 5-point scale (0 = "not at all interesting, 4 = "extremely interesting"). After, participants took several questionnaires and completed some working memory assessments before taking a fill-in-the-blank memory test for the 120 trivia statements. Data collection for this study is still ongoing and analysis of the data will be completed by mid-April.

RADIOSITY: NECESSARY OPPONENTS – LIGHT AND SHADOW

Micah Bloom
Department of Fine and Performing Arts

"We eat light, drink it in through our skins" - James Turrell

Radiosity is a pursuit to blend concepts of physics (specular reflection/ diffuse reflection, global illumination/color bleeding) and art (Light and Space, Minimalism, Geometric Abstraction), and the goal is to further stretch technologies and materials to optimize a glowing color effect, balanced between light and shadow. In addition, there is an effort to combine these physical, visual effects with engaging, original forms for color to play upon. Always, it is intended that the viewer sees only the colored, reflected light and never the applied, pigmented color.

In *Radiosity* there are two primary methods used to create a glowing color effect. First a bright, unidirectional light illuminates pigmented, matte surfaces and then scatters colored light into shadows (diffuse reflection) that fall on white surfaces. Second, a bright, diffused light softens the harshness of shadows on objects and allows scattered light rays to bounce off pigmented surfaces and color shadowed areas (ambient occlusion).

There have been two exhibition opportunities for this experiment, and the results are mixed. *Radiosity* depends on particular light settings (some direct and some diffused) and particular reflective surfaces (white walls), so the ideal settings can be difficult for a gallery to achieve. Some of the works thrive in darker spaces with dramatic spotlights and others crave bright, diffused, omnidirectional lighting. Successes were individual, and, at times, stunning, with viewers appreciating a unique, visual experience.

AN ALTERNATIVE PRODUCT IN AN ALDOL CONDENSATION REACTION BETWEEN 2,4-DICHLOROBENZALDEHYDE AND 4-CYANOACETOPHENONE

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Department of Science

Background: Earlier in our research, we synthesized 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one via an aldol condensation reaction between 2,4-dichlorobenzaldehyde and 2,4-dichloroacetophenone. Surprisingly, the reaction appeared to be highly exothermic resulting in overheating and thermal decomposition of the product. The reaction became manageable only after 10-fold dilution over a typical aldol condensation concentration. 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one was used as a starting material in a different project.
Hypothesis: Recently we decided to expand the scope of that project and synthesize a few analogs of 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one. We hypothesized that the aldol condensation reactions between 2,4-dichlorobenzaldehyde and acetophenones with electron-withdrawing substituents will be also highly exothermic and require high dilutions similarly to the reaction with 2,4-dichloroacetophenone. In this work, the hypothesis was tested in the reaction between 2,4-dichlorobenzaldehyde and 4-cyanoacetophenone.
Methods: The reaction was conducted on a 5 mmol scale at room temperature. Filtration and recrystallization were used for the isolation and purification of the product. NMR-spectroscopy and elemental analysis were used to determine the structure of the product.
Result: The reaction appeared to be not exothermic and very slow. The crystalline product did not form instantly. Importantly, the isolated product appeared to be a new compound, and not the expected 1-(4-cyanophenyl)-3-(2,4-dichlorophenyl)-2-propene-1-one. Tentatively, the new product resulted from the condensation of one molecule of 2,4-dichlorobenzaldehyde and two molecules of 4-cyanoacetophenone. The structure identification of the new product is in progress.
Conclusion: The high dilution of the aldol condensation reaction between 2,4-dichlorobenzaldehyde and 4-cyanoacetophenone changes the direction of the reaction and results in the formation of an alternative product.

NOTICING CORE PRACTICES - TEACHING PRE-SERVICE PHYSICAL EDUCATION TEACHERS' OBSERVATION SKILLS: A PILOT STUDY

Yung-Ju 'Ruth' Chen and Kelsey Higginson
Department of Science

Purpose. Clinical observation skills are crucial for effective practices across professions, including nursing, medicine, and teaching. Teachers need to possess observation skills to identify students' learning needs and teaching behaviors in order to engage in reflective practices. Video-based observation has emerged as a particularly effective approach for enhancing observational, analytical, and reflective skills among pre-service teachers. This study aimed to develop a short video-based instructional module for developing pre-service physical education (PE) teachers' observation skills and assess its feasibility. **Methods.** The intervention consisted of a lecture introducing the concepts and examples of the six core practices and a guided video analysis of core practices in various PE teaching scenarios. Three pre-service PE teachers (2 males and 1 female) participated in the study. Their knowledge of effective PE teaching and ability to identify core practices when observing PE teaching were measured at pre- and post-tests. A transfer test was also conducted to determine the transfer of learning. Researchers' observation and discussion notes were taken and analyzed to evaluate the feasibility of a larger-scale study. **Results and Conclusions.** Descriptive analyses revealed that all three students demonstrated increased knowledge of effective PE teaching and abilities to identify more core practices when observing PE teaching in the videos. Furthermore, this feasibility study offered valuable insights into the logistical considerations required for conducting a larger-scaled study, including adjustments in recruitment, randomization procedures, intervention delivery, and data analysis protocols.

THE EFFECTS OF METHAMPHETAMINE ON PRIMARY CELL CULTURES OF CHROMAFFIN CELLS

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Amphetamines are known to stimulate the release of dopamine (DA), norepinephrine (NE), and epinephrine (Epi) in the brain. The aversive response seen in methamphetamine (MA) abuse specifically due to Epi release suggests a possible MA-stimulated Epi secretion in the peripheral nervous system via adrenal chromaffin cells. Considering chromaffin cells and the brain are both derived from the neural crest, it is possible they respond to MA through similar mechanisms. In this study we explore the potential stimulating effects of MA on catecholamine (CA) release from adrenal chromaffin cells. Studying the mechanism in which chromaffin cells respond to MA will allow further understanding of MA addiction, and how adrenal chromaffin cells play a role in its aversive side effects possibly leading to better understanding and treatments for addiction. Recent testing by ELISA and LC-MS showed a significant increase in Epi secretion following MA stimulation. In addition, further LC-MS analysis indicated elevated NE levels after MA stimulation as well. No significant change in DA levels were noted by LC-MS. ELISA data suggest while MA treatment alone can stimulate Epi secretion, additive effects are seen when chromaffin cells are treated with MA and acetylcholine (Ach) together.

ISOLATION OF NUCLEI FROM BOVINE AND PORCINE PRIMARY CHROMAFFIN CELL CULTURES

Megan Connell, Skylar Hall, Faith Hauck, Tara Czemeres, Michael Rayel, L. Keith Henry, James Foster, and Bryan Schmidt
Department of Science

The adrenal medulla is a heterogeneous tissue, thus giving various types of cells within a sample during chromaffin cell extraction. Our previous studies suggest an overproduction of epinephrine (Epi) secretion from adrenal chromaffin cells when treated with methamphetamine. Due to the heterogeneity of the chromaffin cell sample, some cells are producing Epi and some cells are not. Therefore, the purpose of this study is to isolate the nuclei to identify potential surface markers on the Epi-producing cells to be able to separate this population from the other non-Epi-producing cells within the adrenal medulla.

Current work in our lab has focused on the isolation of nuclei from bovine and porcine primary chromaffin cell cultures. The isolation of nuclei is performed from frozen samples of the chromaffin cell cultures, using the Minute Detergent-Free Nuclei Isolation Kit. Before any further processes to test for surface markers can be completed, the quality of the nuclei must be examined. Therefore, the quality and quantity of nuclei following the isolation process are assessed via DAPI staining, which is a blue fluorescent DNA stain.

RAPID SYNTHESIS OF N-[1-(4-BROMOPHENYL)ETHYL]FORMAMIDE

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Department of Science

Background: Recently, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of substituted N-(1-phenylethyl)formamides. Specifically, the reaction between 4-chloroacetophenone and unsubstituted formamide was completed in 10 minutes and produced N-[1-(4-chlorophenyl)ethyl]formamide with an isolated yield of 81%. The new procedure appeared to be much faster than the traditional Leuckart reaction that is usually completed within 3 to 6 hours.
Hypothesis: Chlorine is a moderately electron-withdrawing group. It reduces the electron density on the carbonyl and makes it more reactive towards formamide in the Leuckart reaction. Replacing chorine with bromine, a less electron-withdrawing group, will make the carbonyl slightly less reactive and slow down the Leuckart reaction. In this work, the hypothesis was tested in the reaction between 4-bromoacetophenone and formamide.
Methods: The reaction was conducted on a 10 mmol scale at 180ºC - 202ºC. Extraction and column chromatography were used for the isolation of the products of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structures of the products.
Result: The reaction was completed in 15 minutes. The isolated yield of N-[1-(4-bromophenyl)ethyl]formamide was 85.19%. In addition to the main product, 4-(4-bromophenyl)pyrimidine was obtained as a minor by-product with an isolated yield of 10.79%.
Conclusion: The results of the reaction support the initial hypothesis that replacing chorine with bromine will slow down the Leuckart reaction. The reaction provides a new method for the synthesis of N-[1-(4-bromophenyl)ethyl]formamide. N-[1-(4-bromophenyl)ethyl]formamide is a new compound.

GENDER DIFFERENCES IN SOCIAL MEDIA ADDICTION, ANXIETY, AND DEPRESSION

Alex Engel and Krystal St. Peter
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In the current world we live in, there is a lot of importance placed on technology, and none more than our phones. Increasingly we are spending more time on social media apps, such as Instagram and TikTok. Alongside the increased time spent on our phones, anxiety and depression rates also remain at a high level. Participants in this study completed several questionnaires, including the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995), the Social Media Disorder Scale (SMDS; van den Eijnden et al., 2016), the Test of Instagram Addiction (TIA; D'Souza et al., 2018), and a modified version of the TIA for TikTok. The current study aims to assess the potential relationships between gender, anxiety, depression, Social Media Addiction, Instagram Addiction, and TikTok Addiction in a college sample. Data collection is ongoing and data analysis will be completed by mid-April.

MENTORSHIP: A MUTUALLY BENEFICIAL COLLABORATION

Megan Fixen and Beverly Fleischman
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Supporting and nurturing the next generation of educators is a fundamental aspect of academia. Unique challenges exist for new faculty members in adapting to the academic environment. New faculty may need assistance with transitioning into their new role as an instructor as well as a colleague. Collaboration through mentorship has a positive impact on teaching, job satisfaction, and enhanced opportunities for learning and growth. This poster presentation will provide practical tips to build an effective mentor relationship. Best practices will be shared for designing and implementing mentorship strategies to develop a thriving academic community.

AN ALTERNATIVE PRODUCT IN AN ALDOL CONDENSATION REACTION BETWEEN 2,4-DICHLOROBENZALDEHYDE AND 4-TRIFLUOROMETHYLACETOPHENONE

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Department of Science

Background: Earlier in our research, we synthesized 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one via an aldol condensation reaction between 2,4-dichlorobenzaldehyde and 2,4-dichloroacetophenone. Surprisingly, the reaction appeared to be highly exothermic resulting in overheating and thermal decomposition of the product. The reaction became manageable only after 10-fold dilution over a typical aldol condensation concentration. 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one was used as a starting material in a different project.
Hypothesis: Recently we decided to expand the scope of that project and synthesize a few analogs of 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one. We hypothesized that the aldol condensation reactions between 2,4-dichlorobenzaldehyde and acetophenones with electron-withdrawing substituents will be also highly exothermic and require high dilutions similarly to the reaction with 2,4-dichloroacetophenone. In this work, the hypothesis was tested in the reaction between 2,4-dichlorobenzaldehyde and 4-trifluoromethylacetophenone.
Methods: The reaction was conducted on a 5 mmol scale at room temperature. Filtration and recrystallization were used for the isolation and purification of the product. NMR-spectroscopy and elemental analysis were used to determine the structure of the product.
Result: The reaction appeared to be not exothermic and very slow. The crystalline product did not form instantly. Importantly, the isolated product appeared to be a new compound, and not the expected 3-(2,4-dichlorophenyl)-1-(4-trifluoromethylphenyl)prop-2-en-1-one. Tentatively, the new product resulted from the condensation of one molecule of 2,4-dichlorobenzaldehyde and two molecules of 4-trifluoromethylacetophenone. The structure identification of the new product is in progress.
Conclusion: The high dilution of the aldol condensation reaction between 2,4-dichlorobenzaldehyde and 4-trifluoromethylacetophenone changes the direction of the reaction and results in the formation of an alternative product.

TEACHER CANDIDATE PERCEPTIONS OF USING A SET CURRICULUM TO TEACH A HOMESCHOOL PHYSICAL EDUCATION PROGRAM

Kelsey Higginson
Department of Science

Teacher candidates in university programs learn to teach best by teaching, and well-structured and supervised clinical experiences can improve teaching skills. MSU started a homeschool PE program to give education majors in all subjects experience with school-aged children. Because not all majors have experience in teaching physical education, we used curriculums with pre-made lesson plans. There are two well-known physical education curriculums that come with pre-written lesson plans (SPARK and DPE); we wanted to know which would be a better fit for our program. MSU students in the Homeschool PE program used each curriculum for five weeks while working with kids, then switched to the other curriculum. A pre-survey of what students knew about curriculum and teaching was taken at the start of the program. After using each curriculum, a post-survey was given to gather impressions. At the conclusion of the 10-week homeschool program a focus group discussion was used to reflect on both curriculums. Survey data showed that SPARK lessons were easier to follow, and students thought kids liked them better. Students loved the four-part lesson plan and video examples from DPE but thought the explanations were not as good. Students liked the variety of activities in SPARK but sometimes the website was difficult to navigate. In the focus group, most people preferred to use SPARK but those with more experience with DPE also like that curriculum. Students liked having access to both curriculums, but their preference was for SPARK.

AN ALTERNATIVE PRODUCT IN AN ALDOL CONDENSATION REACTION BETWEEN 2,4-DICHLOROBENZALDEHYDE AND 4-CHLOROACETOPHENONE

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Department of Science

Background: Earlier in our research, we synthesized 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one via an aldol condensation reaction between 2,4-dichlorobenzaldehyde and 2,4-dichloroacetophenone. Surprisingly, the reactions appeared to be highly exothermic resulting in overheating and thermal decomposition of the product. The reaction became manageable only after 10-fold dilution over a typical aldol condensation concentration. 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one was used as a starting material in a different project.
Hypothesis: Recently we decided to expand the scope of that project and synthesize a few analogs of 1,3-bis-(2,4-dichlorophenyl)-2-propene-1-one. We hypothesized that the aldol condensation reactions between 2,4-dichlorobenzaldehyde and acetophenones with electron-withdrawing substituents will be also highly exothermic and require high dilutions similarly to the reaction with 2,4-dichloroacetophenone. In this work, the hypothesis was tested in the reaction between 2,4-dichlorobenzaldehyde and 4-chloroacetophenone.
Methods: The reaction was conducted on a 5 mmol scale at room temperature. Filtration and recrystallization were used for the isolation and purification of the product. NMR-spectroscopy and elemental analysis were used to determine the structure of the product.
Result: The reaction appeared to be not exothermic and very slow. The crystalline product did not form instantly. Importantly, the isolated product appeared to be a new compound, and not the expected 1-(4-chlorophenyl)-3-(2,4-dichlorophenyl)-2-propene-1-one. Tentatively, the new product resulted from the condensation of one molecule of 2,4-dichlorobenzaldehyde and two molecules of 4-chloroacetophenone. The structure identification of the new product is in progress.
Conclusion: The high dilution of the aldol condensation reaction between 2,4-dichlorobenzaldehyde and 4-chloroacetophenone changes the direction of the reaction and results in the formation of an alternative product.

RAPID SYNTHESIS OF N-[1-(4-BROMOPHENYL)ETHYL]-N-METHYLFORMAMIDE

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Department of Science

Background: Recently, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of substituted N-(1-phenylethyl)formamides. Specifically, the reaction between 4-chloroacetophenone and N-methylformamide was completed in 50 minutes and produced N-[1-(4-chlorophenyl)ethyl]-N-methylformamide with an isolated yield of 88%. The new procedure appeared to be much faster than the traditional Leuckart reaction that is usually completed within 3 to 6 hours.
Hypothesis: Chlorine is a moderately electron-withdrawing group. It reduces the electron density on the carbonyl and makes it more reactive towards formamide in the Leuckart reaction. Replacing chorine with bromine, a less electron-withdrawing group, will make the carbonyl slightly less reactive and slow down the Leuckart reaction. In this work, the hypothesis was tested in the reaction between 4-bromoacetophenone and N-methylformamide.
Methods: The reaction was conducted on a 10 mmol scale at 180ºC - 184ºC. Extraction and column chromatography were used for the isolation of the product of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structure of the product.
Result: The reaction was completed in 75 minutes. The isolated yield of N-[1-(4-bromophenyl)ethyl]-N-methylformamide was 90%.
Conclusion: The results of the reaction support the initial hypothesis that replacing chorine with bromine will slow down the Leuckart reaction. The reaction provides a new method for the synthesis of N-[1-(4-bromophenyl)ethyl]-N-methylformamide. N-[1-(4-bromophenyl)ethyl]-N-methylformamide is a new compound.

EFFECTS OF INSTRUMENT ASSISTED SOFT TISSUE MOBILIZATION (IASTM) ON RANGE OF MOTION AND GRIP STRENGTH

Beth Marschner, Conner Meldrim, and Taylor Cormier
Department of Science

Context. Limited tissue mobility and loss of range of motion (ROM) contribute to changes in movement patterns and function. **Purpose**. The purpose of the study was to determine the effect of instrument assisted soft tissue mobilization (IASTM) on tissue mobility and grip strength. **Participants and Setting**. This study utilized a convenience sample (N=72) from an accredited regional university consisting of students, faculty, and staff. **Design**. Each participant served as their own control using a crossover study design. **Methods**. Individual's ROM was pretested using a goniometer. Grip strength was administered using JAMAR hand dynamometer. Individuals either received IASTM treatment on bilateral upper extremities with HawkGrips or waited during the testing session. Post-tests were completed after each treatment or waiting session. **Results**. MANOVA results showed a significant difference for bilateral elbow flexion and extension, forearm pronation and supination, wrist flexion and extension, wrist radial and ulnar deviation, finger flexion, and thumb extension and abduction ROM between pre-and-posttest IASTM treatment. There was not a statistically significant difference in bilateral grip strength between pre-test IASTM and post-test IASTM. **Conclusions**. The findings of this study indicate that IASTM improves ROM but does not immediately increase strength of grip. The effects on grip may be further investigated by assessing a delayed period of measurement instead of immediate measurement. This study shows support for further research using IASTM to treat other conditions with limited ROM and functional limitations.

EFFECTS OF INSTRUMENT ASSISTED SOFT TISSUE MOBILIZATION (IASTM) ON RANGE OF MOTION AND LOWER EXTREMITY POWER

Beth Marschner, Brody Mohr, and Brady Schock
Department of Science

Context. Limited tissue mobility and loss of range of motion (ROM) contribute to changes in movement patterns. **Purpose**. The purpose of the study was to determine the effect of instrument assisted soft tissue mobilization (IASTM) on tissue mobility and lower extremity power. **Participants and Setting**. This study utilized a convenience sample (N=50) from an accredited regional university consisting of students, faculty, and staff. **Design**. Each participant served as their own control using a crossover study design. **Methods**. Individual's ROM was pretested using a goniometer. Lower extremity power was tested using horizontal and vertical jump measures. Individuals either received IASTM treatment on bilateral lower extremities with HawkGrips or waited during the testing session. Post-tests were completed after each session. **Results**. MANOVA results showed a significant difference for bilateral ankle dorsiflexion and plantarflexion, knee flexion, hip abduction, hip extension, and hip internal rotation. Single side significant difference was observed with right ankle eversion, left hip flexion, and left hip external rotation between pre-and-posttest IASTM treatment. There was a statistically significant difference on horizontal jump but not vertical jump. **Conclusions**. The findings of this study indicate that IASTM improves ROM and lower extremity power. The effects of lower extremity power need further examination. This study shows support for further research using IASTM to treat conditions with limited ROM and functional limitations such as decreased power or speed of movement.

SYNTHESIS OF N-[1-(2,4-DICHLOROPHENYL)-4,4-DIMETHYLPENT-1-EN-3-YL]-2-CHLOROACETAMIDE

Hannah E. Murray, Lioudmila I. Bobyleva, MS, and Mikhail M. Bobylev, PhD
Department of Science

Background: Earlier, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of substituted N-(1-aryl-4,4-dimethylpent-1-en-3-yl)formamides. Specifically, the reaction between 1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-one and formamide was completed in 15 minutes and produced N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide with an isolated yield of 83%. The new procedure appeared to be much faster than the traditional Leuckart reaction that is usually completed within 3 to 6 hours. In addition, it was the first example of the Leuckart reaction successfully completed on an alpha,beta-unsaturated ketone. The earlier attempts to apply the Leuckart reaction to alpha,beta-unsaturated ketones produced mixtures of multiple products resulting from the retro-aldol condensation of the starting material. The first synthesis of N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide also opened the way to the synthesis of its various acyl analogs via the hydrolysis to a free amine and re-acylation. The goal of this work was to synthesize N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]-2-chloroacetamide.
Methods: The re-acylation step was conducted on a 2.5 mmol scale at 0ºC. Extraction and column chromatography were used for the isolation of the product of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structure of the product.
Results: The isolated yield of N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]-2-chloroacetamide was 49%. The conversion of the starting material was 58%. The yield based on the converted product was 84%.
Conclusions: N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]-2-chloroacetamide was successfully synthesized from N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide via the hydrolysis and re-acylation sequence. N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]-2-chloroacetamide is a new compound.

RAPID SYNTHESIS OF N-[1-(4-IODOPHENYL)ETHYL]-N-METHYLFORMAMIDE

Amanda J. Neumiller, Lioudmila I. Bobyleva, MS, and Mikhail M. Bobylev, PhD
Department of Science

Background: Recently, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of substituted N-(1-phenylethyl)formamides. Specifically, the reaction between 4-chloroacetophenone and N-methylformamide was completed in 50 minutes and produced N-[1-(4-chlorophenyl)ethyl]-N-methylformamide with an isolated yield of 88%. The new procedure appeared to be much faster than the traditional Leuckart reaction that is usually completed within 3 to 6 hours.
Hypothesis: Chlorine is a moderately electron-withdrawing group. It reduces the electron density on the carbonyl and makes it more reactive towards formamide in the Leuckart reaction. Replacing chorine with iodine, a less electron-withdrawing group, will make the carbonyl slightly less reactive and slow down the Leuckart reaction. In this work, the hypothesis was tested in the reaction between 4-iodoacetophenone and N-methylformamide.
Methods: The reaction was conducted on a 10 mmol scale at 180ºC - 200ºC. Extraction and column chromatography were used for the isolation of the products of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structures of the products.
Result: The reaction was completed in 45 minutes. The isolated yield of N-[1-(4-iodophenyl)ethyl]-N-methylformamide was 99%.
Conclusion: The reaction with 4-iodoacetophenone was completed even faster than the reaction with 4-chloroacetophenone because of the much higher boiling temperature of the reaction mixture. The reaction provides a new method for the synthesis of N-[1-(4-iodophenyl)ethyl]-N-methylformamide. N-[1-(4-iodophenyl)ethyl]-N-methylformamide is a new compound

OUT OF LISBON: REVOLUTIONARY DIPLOMATIC RELATIONS BETWEEN PORTUGAL, BRAZIL, AND THE NETHERLANDS (1795-1834)

Ernst Pijning
Department of Humanities, Social Sciences, and Interdisciplinary Studies

Diplomatic relations between Brazil, Portugal and the Netherlands continued under difficult circumstances in the period between 1795 and 1831. From the French invasion of the Netherlands (1795) and Portugal (1808) through recognition of Brazil's independence (1825), Belgium independence (1830), the defeat of the Miguelists (1834) and), diplomats had to adapt. This poster discusses how Portuguese, Brazilian, and Dutch envoys changed locations, adapted to new circumstances, expressed their governments' positions and reported with ever greater anxiety about their host countries from the perspective of their ever-changing political views. This poster is based on archival materials from the Dutch and Portuguese National Archives as well as from the Brazilian Foreign Affairs Archive.

FACING THE SELF: WET PLATE COLLODION SELF-PORTRAITS

Ryan Stander, Dyana DeCoteau-Dyess, and Tamara Young
Department of Fine and Performing Arts

Facing the Self is a creative response to health and bodily trauma through a series of wet-plate collodion self-portraits.

In April of 2022, I was diagnosed with a massive tumor in my chest. The next several months were filled with inconclusive biopsies, tests, and scans. A diagnosis came in late August and in September, I received a life-saving surgery to remove the tumor. Shortly thereafter, I began to explore trauma theory as I processed my own health related trauma and recovery.

Each photograph is guided by a concept or memory from my own health journey exploring themes of uncertainty, death and afterlife, family, medical procedures, memory and legacy, bodily changes, life priorities, grief and loss, spirituality, self-reliance and community. Using trauma theory as an investigative lens has helped me to process my own experiences and move the work toward a more universal perspective. The work utilizes an abstract perspective on the self-portrait to include partial figures and faces, as well as, isolated body parts to emphasize the concept, but also to embody the clinical or objective nature treatments that all patients must quickly become accustomed to.

Created in 1851, wet-plate collodion has a singular aesthetic with beautifully contrasting sharpness and softness. Collodion is a chemistry-based photography and thus somewhat unpredictable creating streaks, spots, halos, and all sorts of unexpected (and often unrepeatable) effects. These rather mysterious “blemishes” resonate deeply with me and the unexpected and uncontrollable effects of cancer and other traumatic illnesses.

ALTERNATIVE PRODUCTS IN THE LEUCKART REACTION BETWEEN PENTAFLUOROACETOPHENONE AND N-METHYLFORMAMIDE

Ryan M. Swartwout, Lioudmila I. Bobyleva, MS, and Mikhail M. Bobylev, PhD
Department of Science

Background: Recently, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of substituted N-(1-phenylethyl)formamides. Specifically, the reactions between substituted acetophenones and formamide were completed within 10-20 minutes, much faster than the traditional Leuckart reaction that is usually completed within 3 to 6 hours. However, the reactions between substituted acetophenones and N-alkylformamides appeared to be substantially slower. For example, the reaction between 2,4-difluoroacetophenone and N-methylformamide was completed in 120 minutes.
Hypothesis: Fluorine is an electron-withdrawing substituent. Adding additional fluorine substituents to 2,4-difluoroacetophenone will activate the carbonyl and result in a faster Leuckart reaction. In this work, the hypothesis was tested in the reaction between pentafluoroacetophenone and N-methylformamide.
Methods: The reaction was conducted on a 5 mmol scale at 180ºC - 196ºC. Extraction and column chromatography were used for the isolation of the products of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structures of the products.
Result: The reaction was completed in 13 minutes. However, the expected Leuckart reaction product was neither detected, nor isolated. Instead, two compounds, tentatively identified as 2,3,5,6-tetrafluoroacetophenone and 4-methylamino-2,3,5,6-tetrafluoroacetophenone were isolated with the respective yields of 40% and 19%.
Conclusion: The results of the reaction indicate that the nucleophilic aromatic substitution in electron-poor pentafluoroacetophenone proceeds much faster than the Leuckart reaction.

PROPIONAMIDE IN THE SYNTHESIS OF N-[1-(2,4-DICHLOROPHENYL)-4,4-DIMETHYLPENT-1-EN-3-YL]FORMAMIDE

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Background: Earlier, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide. Later, we made an attempt to use the same procedure for the synthesis of N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]acetamide by the reaction of 1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-one with acetamide. Surprisingly, mostly N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide was produced in the reaction. N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]acetamide was produced only as a minor by-product.
Hypothesis: The fact that the acetamide product was produced as a minor by-product may indicate that, with proper optimization of the reaction, it may turn into the major product. It may also indicate that other amides may be obtained via the Leuckart reaction as well. In this work, the hypothesis was tested in the reaction between1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-one and propionamide.
Methods: The reaction was conducted on a 10 mmol scale at 180ºC - 210ºC. Extraction and column chromatography were used for the isolation of the products of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structures of the products.
Results: The reaction was completed in 30 minutes. Similarly to the reaction with acetamide, the reaction with propionamide produced N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]formamide as the major product and N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]propionamide as the minor product.
Conclusions: The results of the reaction show that N-[1-(2,4-dichlorophenyl)-4,4-dimethylpent-1-en-3-yl]propionamide can be obtained via the Leuckart reaction.

EFFECTS OF COVID-19 ON MATH AND READING SCORES

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COVID-19 was a stressful time for the world. People were not allowed to gather, including in educational settings. Each state approached the lockdown differently with different rules and regulations. We aim to gather information on the effects of COVID-19 and COVID-19 school closures on Math and Reading test scores in upper elementary and middle school children, grades 3, 5, and 8. Data is being collected from public school records in multiple states, from multiple school divisions. Average division test scores from different states will be compared. Comparisons will be made based on the state's COVID-19 closure guidelines, district sizes, and political standings. Data collection and analysis is still ongoing and will be completed by mid-April.

PERFORMANCE-ENHANCING WHAT? PERCEPTIONS OF PERFORMANCE-ENHANCING DRUGS IN ESPORTS AND TRADITIONAL SPORTS

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Once viewed as the realm of dark basements and rare gaming shop events, esports (competitive video gaming) have exploded in popularity in recent years. In the collegiate space alone, the number of programs has grown from roughly 75 varsity programs in the U.S. in 2018 to both the National Esports Collegiate Conference (NECC) and the National Association of Collegiate Esports (NACE) sporting more than 200 collegiate members in 2024 (290 and 258 member institutions, respectively. This growth necessitates difficult discussions about the role of esports in collegiate institutions, the perception of esports programs among collegiate stakeholders, and the rules – or lack thereof – governing collegiate esports competitions. The present work compares perceptions of collegiate esports *as opposed to traditional athletics* in one of the largest ongoing discussions within athletics: the use of performance-enhancing drugs by competitors. A survey of collegiate stakeholders (students, faculty/staff, and administrators) at collegiate institutions in the United States was conducted in order to assess perceptions of *fairness* regarding the use of performance-enhancing drugs (PEDs) by competitors in both traditional athletics and esports. Our findings include a significant difference in perceptions of fairness of PED use between these two contexts, with stakeholders far more likely to believe that PED use was *fair* in esports competitions than in traditional athletics. Potential explanations for these findings, opportunities for future research, and implications for esports policy makers at the collegiate level and beyond will be discussed.

ALTERNATIVE PRODUCTS IN THE LEUCKART REACTION BETWEEN PENTAFLUOROACETOPHENONE AND N-ETHYLFORMAMIDE

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Department of Science

Background: Recently, we developed a rapid procedure for the Leuckart reaction and successfully applied it for the synthesis of substituted N-(1-phenylethyl)formamides. Specifically, the reactions between substituted acetophenones and formamide were completed within 10-20 minutes, much faster than the traditional Leuckart reaction that is usually completed within 3 to 6 hours. However, the reactions between substituted acetophenones and N-alkylformamides appeared to be substantially slower. For example, the reaction between 2,4-difluoroacetophenone and N-ethylformamide was completed in 120 minutes.
Hypothesis: Fluorine is an electron-withdrawing substituent. Adding additional fluorine substituents to 2,4-difluoroacetophenone will activate the carbonyl and result in a faster Leuckart reaction. In this work, the hypothesis was tested in the reaction between pentafluoroacetophenone and N-ethylformamide.
Methods: The reaction was conducted on a 5 mmol scale at 180ºC - 209ºC. Extraction and column chromatography were used for the isolation of the products of the reaction. NMR-spectroscopy and elemental analysis were used to determine the structures of the products.
Result: The reaction was completed in 6 minutes. However, the expected Leuckart reaction product was neither detected, nor isolated. Instead, two compounds, tentatively identified as 2,3,5,6-tetrafluoroacetophenone and 4-ethylamino-2,3,5,6-tetrafluoroacetophenone were isolated with the respective yields of 25% and 19%.
Conclusion: The results of the reaction indicate that the nucleophilic aromatic substitution in electron-poor pentafluoroacetophenone proceeds much faster than the Leuckart reaction.

EYEWITNESS MEMORY FOR CRIMINAL AND NON-CRIMINAL EVENTS

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Eyewitness testimony is often used to convict citizens of crimes despite its questionable validity. The literature seems to suggest that eyewitness testimony can be affected by a variety of individual differences and environmental factors (Loftus, 2018). This study aims to examine the effects of criminal context on source misattribution and eyewitness memory. This study will use videos depicting two-culprit mock-crimes with a single victim and equivalent non-criminal events with a two-person pair interacting with a single, unrelated, individual. Participants will be tested on their memory for the perpetrator and accomplice pairing, the individual actions of the perpetrator, and the individual actions of the accomplice. This can help determine the extent to which actual eyewitnesses would be able to remember the appropriate relationships between multiple feature pairings during a single, complex event, such as a crime. The Memory and Emotion Lab is currently still undergoing filming to create stimuli to be used in this experiment. Two sets of the required four criminal and non-criminal scenes have been already filmed and are currently undergoing editing. Stimuli production and data analysis are ongoing and current progress and results will be presented in mid-April.